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Revision of the Afrotropical species of the *Bengalia peuhi* species-group, including a species reassigned to the *B. spinifemorata* species-group (Diptera, Calliphoridae), with notes on the identity of *Ochromyia petersiana* Loew, 1852 (Diptera, Rhiniidae)

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Abstract

Eleven Afrotropical species of *Bengalia* Robineau-Desvoidy, ten in the *Bengalia peuhi* species-group and one reassigned to the *Bengalia spinifemorata* species-group, are revised. The male genitalia of all, and the ovipositor of six species, are illustrated by means of digital colour photography. A key to males is provided. Two species, i.e., *Bengalia minor* Malloch, 1927 and *Bengalia peuhi* Villeneuve, 1914, are assigned to the *Bengalia peuhi* subgroup of the *Bengalia peuhi* species-group. Five species, i.e., *Bengalia depressa* Walker, 1858, *Bengalia floccosa* Wulp, 1885, *Bengalia gaillardi* Surcouf & Guyon, 1912, *Bengalia roubaudi* Rickenbach, Hamon & Mouchet, 1960 and *Bengalia tibiaria* Villeneuve, 1926 are assigned to the *Bengalia floccosa* subgroup of the *Bengalia peuhi* species-group. Three species, i.e., *Bengalia africanoides* **sp. nov.**, *Bengalia aliena* Malloch, 1927 and *Bengalia wyatti* (Lehrer, 2005) **comb. nov.**, have been left as species *incertae sedis* in the *Bengalia peuhi* species-group. The eleventh species, *Bengalia bantuphalla* (Lehrer, 2005) **comb. nov.**, is reassigned to the *Bengalia spinifemorata* species-group. *Bengalia africanoides* **sp. nov.** has only 3 *post dc* setae, a feature unique for a species of *Bengalia*. A neotype is designated for *Calliphora floccosa* Wulp, 1885 (now in *Bengalia*), to fix the interpretation of the name in accordance with current usage. Lectotypes are designated for *Bengalia bekilyana* Séguy, 1935, *Bengalia depressa*, *Bengalia gaillardi*, *Bengalia peuhi* and *Bengalia unicalcarata* Villeneuve, 1913 to fix the interpretation of the names. *Bengalia africana* Malloch, 1927 is established as a junior synonym of *Bengalia depressa*, **syn. nov.** *Bengalia cuthbertsoni* Zumpt, 1956 is established as a junior synonym of *Bengalia tibiaria*, **syn. nov.** *Shakaniella sakinehae* Lehrer, 2011 is established as a junior synonym of *Shakaniella wyatti* (now in *Bengalia*), **syn. nov.** *Tsunamiya yourubana* Lehrer, 2005 is established as a junior synonym of *Bengalia aliena*, **syn. nov.** *Ochromyia petersiana* Loew, 1852 is removed from its current position as a doubtful senior synonym of *Bengalia depressa* and transferred to the genus *Thoracites* Brauer & Bergenstamm, 1891 as *Thoracites petersiana*, **comb. nov.** in the Rhiniidae. This name is proposed as a senior synonym of *Thoracites neglectus* Zumpt, 1972, **syn. nov.**

Key words: Diptera, Calliphoridae, Rhiniidae, *Bengalia*, *Thoracites*, revision, Afrotropical Region, new species, new synonyms

Introduction

The present work is a sequel to my earlier papers on the genus *Bengalia* Robineau-Desvoidy (Rognes 2006, 2009, 2011a, 2011b) and completes the revision of the Afrotropical species of the genus. In a previous paper (Rognes 2011a) six species of the exclusively Afrotropical *Bengalia spinifemorata* species-group were treated. In the present paper the remaining Afrotropical species are revised. Ten species belong to the *Bengalia peuhi* species-group. One of these is new to science, i.e., *Bengalia africanoides* **sp. nov.** The eleventh species, *Bengalia bantuphalla* (Lehrer, 2005), is transferred to the *Bengalia spinifemorata* species-group from the *Bengalia peuhi* species-group (Afridigaliinae of Lehrer) where Lehrer had placed it, because of the structure of its distiphallus. The enigmatic nominal species *Bengalia africana* Malloch, 1927, described from a female holotype, is synonymised under *B. depressa* Walker.

Methods

Acronyms for depositories.

BMNH	The Natural History Museum, London, United Kingdom
BMSA	Department of Entomology, National Museum, Bloemfontein, South Africa
CNC	Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa, Canada
IRD	Institut de Recherche pour le Développement, Maladies Infectieuses et Vecteurs, Écologie, Génétique, Evolution et Contrôle, Centre IRD de Montpellier, 911 Avenue Agropolis, BP 64501, F-34394 Montpellier Cedex 5, France [= IRD MiVEGEC]. Formerly: Institut d'Enseignement et de Recherche Tropicales de Bondy (Seine), France. Earlier acronym: ORST = France, Bondy, Office de la Recherche Scientifique et Technique d'Outre-Mer
IRSNB	Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium
KR	Private collection of Knut Rognes
MNHN	Muséum national d'Histoire naturelle, Paris, France
MNHUB	Museum für Naturkunde, Leibniz-Institut für Evolutions- und Biodiversitätsforschung an der Humboldt-Universität zu Berlin, Berlin, Germany
MRAC	Musée Royal de l'Afrique Centrale, Tervuren, Belgium
MSNM	Museo Civico di Storia Naturale, Milano, Italy
NMSA	KwaZulu-Natal Museum, Pietermaritzburg, South Africa
NMNW	National Museum of Namibia, Windhoek, Namibia
NMW	Naturhistorisches Museum Wien, Vienna, Austria
OUMNH	Oxford University Museum of Natural History, Oxford, United Kingdom
RMNH	Nationaal Natuurhistorisch Museum Naturalis [formerly Rijksmuseum van Natuurlijke Historie], Leiden, Netherlands (now amalgamated with ZMAN, see below)
TAU	Department of Zoology, Tel Aviv University, Tel Aviv, Israel
ZMAN	Zoological Museum Amsterdam, Afdeling Entomologie, P.O.Box 9517, 2300 RA Leiden, Netherlands (amalgamated with Nationaal Natuurhistorisch Museum Naturalis [formerly Rijksmuseum van Natuurlijke Historie], Leiden, Netherlands)
ZMUC	Zoological Museum, Natural History Museum of Denmark, University of Copenhagen, Copenhagen, Denmark
ZMUN	Natural History Museum, Zoological Museum, University of Oslo, Oslo, Norway

Abbreviations used in text and figures for setae and abdominal sclerites.

<i>a</i>	anterior
<i>acr</i>	acrostichal setae
<i>ad</i>	anterodorsal

<i>av</i>	anteroventral
<i>d</i>	dorsal
<i>dc</i>	dorsocentral setae
<i>h</i>	humeral setae
<i>ia</i>	intra-alar setae
<i>kepst</i>	katepisternal setae
<i>npl</i>	notopleural setae
<i>p</i>	posterior
<i>pa</i>	postalar setae
<i>pd</i>	posterodorsal
<i>ph</i>	posthumeral setae
<i>post acr</i>	postsutural acrostichal setae
<i>post dc</i>	postsutural dorsocentral setae
<i>prst</i>	presutural seta
<i>prst acr</i>	presutural acrostichal setae
<i>prst dc</i>	presutural dorsocentral setae
<i>pv</i>	posteroventral
<i>sa</i>	supra-alar setae
ST	abdominal sternite
T	abdominal tergite
TST	tergosternite

Abbreviations used on figures of genitalia.

<i>antl.</i>	antler
<i>ba.t.</i>	basal tooth of antler
<i>b.s.</i>	bacilliform sclerite (the upper one of the two present in <i>Bengalia</i>)
<i>d.f.</i>	distal finger
<i>dl.wi.</i>	dorsolateral wing
<i>d.p.</i>	dentate process (in distiphallus of <i>B. bantuphalla</i> , Fig. 244)
<i>d.s.</i>	dorsal shield (in distiphallus of <i>B. aliena</i> , Figs. 202–206)
<i>e.</i>	external hypophallic lobe
<i>e1, e2, e3</i>	proximal, middle and distal projections of distal part of external hypophallic lobe (in distiphallus of <i>B. aliena</i> , Figs. 202–206, 208)
<i>ej.o.</i>	opening of ejaculatory duct (in distiphallus of <i>B. bantuphalla</i> , Figs. 244, 246, 247)
<i>h.p.</i>	horizontal process (in distiphallus of <i>B. aliena</i> , Figs. 201, 203, 208)
<i>i.</i>	internal hypophallic lobe
<i>l.f.</i>	lateral finger
<i>u.l.</i>	upper lip
<i>v.</i>	veil (in distiphallus of <i>B. bantuphalla</i> , Figs. 243–245, 251, 256)
<i>v.p.</i>	veil process (in distiphallus of <i>B. bantuphalla</i> , Figs. 243–245, 247, 251, 256)
<i>v.r.</i>	vertical rod (in distiphallus of <i>B. bantuphalla</i> , Figs. 244, 246, 247)
<i>v.s.</i>	vaginal sclerite (in ovipositor of <i>B. peuhi</i> , Figs. 41–42)

Condition of material, dissection, photography and terminology.

Lehrer material. Some problems were encountered with types or other specimens that had been examined and dissected earlier by Lehrer. The genitalia tubes of the holotype of *Bengalia tibiaria* Villeneuve (in MRAC), and of the paratype of *Kenypyga bantuphalla* Lehrer (in TAU) were both dried out completely, and in the case of the former a substance had been absorbed by the inner end of the rubber stopper to judge by its soft consistency. The

evaporated or absorbed substance may have been bergamot oil, employed by Lehrer in the process of making preparations for microscopy (Lehrer 2011b). In these and other cases a substance was found adhering to the genitalia as white clumps, grey opaque masses, strings on various surfaces or as internal infiltrates of varying refractive index creating edges, half-circles etc. obscuring the finer details of the genitalia (cf. Rognes 2011a: 3). I have earlier thought these remains were undissolved glycerol-jelly, but, according to Lehrer's recent account of his method of preparing genitalia for microscopy, he never uses glycerol-jelly, so the substance must be something else. His method (Lehrer 2011b: 7–8) involves successive treatment in boiling 10% KOH, dehydration in 96% alcohol, and clearing in bergamot oil. Afterwards a small quantity of fluid Canada balsam is placed on a microscope slide (“lame de verre”). “On dépose cette lame sur une platine, qui sera chauffée à 300°C pendant quelques minutes ... [one places the slide on a plate, which is heated to 300°C for a few minutes ...]”. At the right moment the slide is removed from the heating source and after solidification of the balsam, the dissected object (in bergamot oil) is subsequently placed carefully on the balsam. The object is then covered with a small amount of slightly diluted Canada balsam and finally a cover glass. After 1–2 days the balsam and the bergamot oil are described by Lehrer to be well homogenised. The preparation is then permanent, and is ready for examination and drawing with the aid of a camera lucida (“chambre claire”). According to Lehrer, this preparation process “peut être défait par l'introduction de la lame dans une boîte de pétri avec xylol ou benzol ... Puis, ... on l'introduit dans le petit verre avec l'huile de bergamote. Si nous désirons mettre la pièce dans un microtube avec glycerine, il faut passer la pièce de l'huile de bergamote dans un bain d'alcool à 96% et puis dans l'eau [may be reversed by placing the slide in a Petri dish with xylene or benzene ... Then, ... one places it in a glass with bergamot oil. If one wishes to place the object in a microvial with glycerol, it is necessary to transfer the object from bergamot oil to 96% alcohol and then to water].”

The holotype of *Shakaniella wyatti* Lehrer in BMNH and many other Lehrer specimens I examined for the *B. spinifemorata* species-group revision (Rognes 2011a) had the genitalia in a vial with glycerol, and with no drying out of the tube contents. Nevertheless, when observed under a stereomicroscope greyish masses and infiltrates were still present, in varying degrees, but often very plentiful. Under a compound microscope it was evident that the distiphallus had been infiltrated with a substance with another refractive index than the surrounding medium, which was creating circles, edges and lines through the object so that it was almost impossible to photograph by transmitted light. This substance was blocking the light, creating large black areas. A good example is shown by the distiphallus Lehrer has dissected of a male *B. roubaudi* Rickenbach, Hamon & Mouchet from Angola (Figs. 128–130). In this case the genitalia tube employed by Lehrer was half filled with glycerol, and at first sight the genitalia appeared quite normal. Close inspection, however, revealed the usual defects in Lehrer's preparations, described above. These grey masses and infiltrates are likely to be remains of Canada balsam employed in the earlier stages of his procedure and which has not been completely dissolved by the reversal procedure cited above. We have Lehrer's own words for the fact that “cette masse opaque est le résultat d'une incompatibilité chimique entre les substances incorporées dans la genitalia et son [= KR's] glycérol [this opaque mass is the result of a chemical incompatibility between the substances incorporated in the genitalia and his glycerol]”. The composition of glycerol is unlikely to vary significantly from region to region, so one can be fairly sure that the opaque masses and internal infiltrates of different refractive index are remains of Canada balsam, incompletely removed by Lehrer's reversal process before he transferred the genitalia to vials with his own glycerol. This process is apparently not as reversible as Lehrer claims.

There is another problem with Lehrer's method. I repeatedly find important discrepancies between the antler tip in the distiphallus of a species studied by myself, and the antler tip as illustrated by Lehrer for the same species, or even for the same specimen. An example is the tip of the antler of the holotype of *B. tibiaria* (the Beni a Lesse specimen). Lehrer (2005: 74) illustrated the antler in his fig. 32C. It is also shown in my Fig. 162. Both figures are made from exactly the same specimen. The broken basal tooth of the right antler is evident in Fig. 162 (upper part of figure) and the very fine transparent tip of the antler is also shown in this figure (magenta arrows). Other pictorial evidence from the holotype distiphallus in apical view is available that shows bifid antler tips (as shown in another male in Fig. 159). The paucity of detail revealed in Lehrer's figure (prepared many years before mine) of exactly the same feature is quite evident. The antler tip is shown to be blunt and rounded, without any further details. Correspondingly, in his figure of the *cuthbertsoni* distiphallus (Lehrer 2005: 32 fig. 11C) the antler is shown with a folded tip. In the key (p. 25) the *B. tibiaria* antlers (“apophyses latérales postérieures”) are described as “courtes, étroites et simples”, whereas the *B. cuthbertsoni* antlers are described as “bifides au bout” (note that

these names are synonyms). Another example is his preparation of the distiphallus of *B. roubaudi* (from Angola) where the right antler is broken (Figs. 128, 129), and the left antler does not show the details of the tip correctly. Similarly, a comparison of the aedeagus of the holotype of *Shakaniella wyatti* in BMNH with the specimen in NMSA, reveals that the antler of the specimen that has been prepared and examined by Lehrer is partly destroyed and torn and unsuitable for illustrative purposes. Numerous other examples can be found in Rognes (2011a).

Dissection of female ovipositors. The abdomen of each female was broken off by applying a slight pressure with forceps on the tip of the abdomen from the underside. The abdomen was boiled in 10% KOH (the crushed fragments of the freshly burnt head of an ordinary match was used as boiling stones to prevent bumping and superheating of the liquid), rinsed in several changes of water and then transferred to 96% ethanol. After about an hour it was transferred to two changes of glycerol where the ovipositor was kept for several hours. The telescoped ovipositor together with the ST1–5 was dissected loose from the abdominal tergites T1–5 as a unit. After removal of tracheae and other internal organs, the ovipositor segments were drawn out from their telescoped position within each other by pulling the tip with fine forceps while holding ST5 with another forceps. The structures were kept like this for photography, and the ovipositor usually not slit open lengthwise and mounted flat as e.g. done with the dissections used for my illustrations of the ovipositors of Scandinavian blowflies (Rognes 1991). The reason for this is that ST8 in *Bengalia* species is an almost right-angled structure as seen in profile and a flat mount would destroy its appearance. Neither have I made any attempt at describing the extent of microtrichiae of the various membranes and sclerites.

Photography. The techniques used for photography are explained in Rognes (2009). Each plate was created as a Photo-Collage from a number of open files present in the “Project Bin” as implemented in the Editor of Photoshop Elements 6. One simply drags a finished photo (as a .tif file) on to a blank file of 17 cm width. Each photograph resides in a frame layer which can be moved, manipulated and resized without losing information (“Smart Object”). This means that the resized figures making up the plates retain the original image quality (resolution) through multiple transformations (Andrews 2008: 143–144, 324).

Terminology. The general morphological terminology follows Rognes (1991). The various terms used for the description of the *Bengalia* aedeagus follow those defined and employed by Rognes (2009) for the *Bengalia peuhi* species-group, and Rognes (2011a) for the *Bengalia spinifemorata* species-group. Their abbreviations are listed above. Geographical names follow *The Times Comprehensive Atlas of the World, 10th Edition, 1999* (Millenium Edition), or *Google Earth* (version 6.1.0.5001).

Format of lists of material.

In the “Material examined” lists for each species, specimens are listed separately for each museum depository, which are sorted alphabetically. Under each depository, the species are sorted by country. Specimen labels are numbered successively from the top to the bottom of the pin, the numbers being enclosed within parentheses. The lines on each label are separated by a slash (/). If the label text itself contains a printed or a handwritten slash, then the label lines are separated by double slashes (/). The label text is cited without use of quotation marks to simplify the typesetting. In the Distribution section of the treatment of each species an asterisk (*) before a name of a country means that I have examined material from that country.

Genus *Bengalia* Robineau-Desvoidy

Bengalia Robineau-Desvoidy, 1830: 425. Type species: *Bengalia testacea* Robineau-Desvoidy, 1830, by designation of Duponchel (1842: 542) (= *Musca torosa* Wiedemann, 1819). For lists of generic synonyms, see James (1977), Pont (1980), and Rognes (2006, 2011a).

The genus *Bengalia* has been characterised by several authors, including Bezzi (1911, 1913), Surcouf (1920), Malloch (1927), Senior-White *et al.* (1940), Zumpt (1956), Lehrer (2005, as Bengaliidae) and Rognes (2011b) and its defining character states need not be repeated here. A phylogenetic analysis of its systematic position was given by Rognes (1997, 2011b).

Key to males of Afrotropical *Bengalia* Robineau-Desvoidy

I recommend study of the genitalia before attempting identification of any Afrotropical *Bengalia* specimens. At the very least the male genitalia should be examined before assigning an Afrotropical specimen to the *Bengalia spinifemorata* group. One species, *Bengalia wyatti*, with very closely set T4 marginals, *pv* spinous setae on fore femur, only (or almost) yellow setulae on anepimeron and no fringe on hind tibia, thus mimicking the condition in most members of the *spinifemorata* species-group, belongs to the *peuhi* species-group.

Many species can be identified by the shape of the ST5 flap, but great caution should be exercised when attempting this. First, because this structure may be quite variable in some species. An outstanding example is the ST5 flap of *Bengalia tibiaria* (cf. Figs. 163–165); I have seen specimens with an even smaller nick in the hind edge than shown in Fig. 165. Second, it is often quite difficult to appreciate correctly its precise shape in dried specimens, because the distal margins may be transparent and without microtrichiae.

The Oriental species *Bengalia unicolor* Séguéy has been incorporated into the key to distinguish it from the similar Afrotropical species *B. minor* Malloch and *B. peuhi* Villeneuve with regard to the morphology of the distiphallus. There is also an entry in the key to the other Oriental species of the *B. peuhi* species-group.

All Afrotropical *Bengalia* species have a pair of strong discal setae on T5. Very rarely T5 lacks discal setae. This is the usual condition in *Bengalia aliena* Malloch. I have seen only two other instances of this, which I interpret as individual aberrations: a male of *B. peuhi* and a female of *B. depressa* Walker. The latter specimen is the holotype of a separate nominal species (*Bengalia africana* Malloch, a junior synonym of *B. depressa*).

- 1 Hind tibia with 1–2 *pd* setae, one at about middle, the other in upper part; anepimeron with yellow setulae only; hind tibia with a dense fringe in at least lower two thirds, on *av*, *a* and *pv* surfaces. 2
- Hind tibia without *pd* setae 4
- 2 ST5 flap a short, transverse, rectangular piece, half as long as wide, with an almost straight hind edge; fore tibia without or with short ventral spine-like setae in proximal half, their length at most about half the width of the tibia (Figs. 1–4); lunula with or without setulae; epandrium yellow; basitarsus of hind leg without long *av* setae longer than diameter of basitarsus; T5 sometimes with reduced or enlarged number of discal setae; distal part of external hypophallic lobes projecting laterally outside of proximal part of that lobe, as seen in ventral view of distiphallus; lateral finger small, not projecting beyond outer / lateral edge of distal part of external hypophallic lobe as seen in ventral view; dorsolateral wings as seen from front of aedeagus, forming an angle of slightly less than a right angle, the outermost part of the dorsolateral wings rather horizontal, transparent and visible in dorsal view of the aedeagus, distal edges widest apart about at level of distalmost part of external hypophallic lobe; antler tip with 2–3 small tines close together. *Bengalia minor* Malloch
- ST5 flap at least as long as broad; fore tibia usually with prominent ventral spine-like setae in proximal half (Rognes 2009: 64 fig. 183; Fig. 20); lunula bare or setose; epandrium yellow or black; basitarsus of hind leg with long *av* setae, longer than diameter of basitarsus; dorsolateral wings of distiphallus not visible in dorsal or ventral view. 3
- 3 ST5 flap with a posterior edge showing a slight concavity affecting the whole edge or an indentation at middle; lunula bare; epandrium usually shining black or dark brown, sometimes bright yellow (most specimens from Namibia); lateral finger projecting or not outside of outer / lateral limit of anterior part of external hypophallic lobe as seen in ventral or dorsal view; distal part of external hypophallic lobe projecting or not beyond outer limit of proximal part in dorsal or ventral view; antlers curving upwards *Bengalia peuhi* Villeneuve
- ST5 flap with a straight posterior edge, posterolateral corners drawn out dorsally (best seen in lateral view); lunula with two long setulae (holotype) or bare (male in CNC); epandrium yellow (holotype), concolorous with the abdominal tergites; lateral finger very small, not projecting outside of outer / lateral limit of distal part of external hypophallic lobe as seen in ventral or dorsal view; distal part of external hypophallic lobe projecting beyond outer limit of proximal part in dorsal or ventral view; antlers long, directed forwards and upwards, a slight bend at middle . . . [*Bengalia unicolor* Séguéy, Oriental; see Rognes 2009]
- 4 Fore femur with 2–7 *pv* spinous setae; fore tibia with a row of strong setae in proximal half of ventral surface; no or reduced fringe on hind tibia; median marginal pair of setae on T4 usually close together, their distance half the distance between discal setae of T5 (in *B. aliena*, lacking T5 discals, distance variable) or even less; T5 with or without discal setae; distiphallus with an antler, or with a veil and a directly attached veil process 5
- Fore femur without *pv* spinous setae; ventral surface of proximal half of fore tibia with or without spinous setae of variable size and strength; fringe present on hind tibia; median marginal setae of T4 not strikingly close together; discals on T5 present and strong, though one of them rarely may be weak or absent (*B. africanoides* sp. nov.); antler present in distiphallus 8
- 5 T5 usually without a pair of discal setae (one case observed [Gabon MNHN] with a single weak discal seta); anepimeron with a group of about 3–7 black rather short setae near upper margin, usually quite strong and curved at tip (thicker at base than meral setae, but thinner at base than anepisternal setae, only half as long as meral setae), other setulae below this group yellow; hind tibia with weak fringe of 2–3 long and several weaker setae in distal half; fore femur with 4–5 *pv* spinous setae and long, slender and densely set setae on *a* and *av* side; fore tibia with a regular row of strong spines in proximal half, lowermost spine strongest and about as long as width of tibia, those above becoming gradually shorter, fringe of long slender setae in lower third; ST5 flap a very short and broad “crossbar”; distiphallus with antlers and upper lip *Bengalia aliena* Malloch

- T5 usually with a pair of strong discal setae; anepimeron without strong setae near upper margin, the vestiture consists of black or pale long thin setae only; no fringe on hind tibia 6
- 6 Frontal vitta practically bare, at most up to six sparse and exceedingly minute setulae; ST5 flap as in Fig. 234; anepimeron only with pale setulae or with very few black setulae in the upper part; distiphallus with a broad transparent fan-shaped antler (resembling a veil in apical view), at the base of which is prominent basal tooth; with a forwardly projecting upper lip; with a small lateral finger; veil, veil process and beak absent; opening of ejaculatory duct at level of apex of distiphallus *Bengalia wyatti* (Lehrer)
- Frontal vitta with numerous conspicuous short black setae all over; ST5 flap as in Fig. 249, or with a concavity in hind margin of varying depth, varying from an almost straight hind margin, to a very deep V- or U-shaped excavation (cf. figures in Rognes (2011a); anepimeron with yellow setulae only (very rarely a few black setulae in uppermost part) or with mostly black setulae; distiphallus without antler, without upper lip and without lateral finger; instead with a broad, more or less dorsally directed transparent veil on each side separated from its counterpart by a gap at the distal end of the middorsal wall, and with a more or less ventrally directed veil process originating laterally at the proximal part of the veil; usually with a prominent beak, a broad somewhat swollen structure at the anteriormost end of the ventral surface of the distiphallus (in *bantuphalla* a beak is weakly developed); opening of ejaculatory duct very narrow, at tip of the beak, far behind and below apex of distiphallus; hypophallic lobe with its greatest extent facing anteroventrally or anteriorly; fore femur with 2–3 *pv* spinous setae. 7
- 7 Anepimeron vestiture variable, from almost exclusively clothed with black setulae, to pale setulae present in lower two thirds and black setulae in upper third (holotype); distiphallus as in Figs. 243–247: veil process large, oval and flat and with small serrations near margins; external hypophallic lobe facing forwards (anteriorly), with a small dentate process dorsodistally; beak hardly differentiated; opening of the ejaculatory duct narrow, at the end of an upturned tube, far behind apex of distiphallus; long vertical rods (*v.r.*) on each side of the upturned tube carrying the opening of the ejaculatory duct; small triangular projections on underside of fore margin of lamella between the veils (magenta arrows in Figs. 244, 246, 247) *Bengalia bantuphalla* (Lehrer)
- Anepimeron almost always with yellow setulae only, though a few black ones may be present occasionally; distiphallus different: veil process variously shaped but never oval, usually long and narrow, rounded in cross section or flattened distally only; external hypophallic lobe facing downwards (ventrally or anteroventrally); beak very prominent; no long vertical rods and no small triangular projections in these positions *Bengalia spinifemorata* species-group, six remaining species (keyed by Rognes 2011a)
- 8 ST5 flap small; shorter than broad, with a hind edge that has two lateral convexities and a central shallow concavity (Fig. 192); 3 *post dc*; anepimeron with all setulae black; fore tibia without ventral spinous setae; no distal finger in distiphallus (Figs. 185, 186, 189) *Bengalia africanoides* sp. nov.
- ST5 flap different; 4 *post dc*; anepimeron with black setulae only or a considerable number of pale setulae in combination with a bundle of black setulae in upper part; fore tibia with or without ventral spinous setae; distal finger absent or present 9
- 9 Distiphallus with a pair of distal fingers of varying shape and strength situated on the inner side of the distal part of the dorso-lateral wings (*d.f.* in Figs. 52, 53, 56, 58, 82, 83, 85, 88, 104, 109, 110, 128, 129, 132, 137, 158, 159, 161, 162) (Afrotropical species) 10
- Distiphallus without distal finger (Oriental species) *Bengalia peuhi* species-group (keyed by Rognes 2009)
- 10 ST5 flap distally convex (Fig. 133); fore tibia without short *v* spine-like setae; hind tibia with a very sparse *av* fringe consisting of 5–7 thin setae on *av* side only, longest setae in fringe about as wide as width of tibia; anepimeron with dark setulae only, lower ones may appear yellowish in some lights *Bengalia roubaudi* Rickenbach, Hamon & Mouchet
- ST5 flap with distal margin evenly concave, or with a conspicuous medial V- or U- (or even almost O-) shaped excavation at middle of hind edge (rarely reduced to a small nick); fore tibia with or without *v* spine-like setae; hind tibia with a conspicuous or sparse *av* fringe; anepimeron with black (above) and yellow (below) setulae, or with almost all black setulae, yellow setulae confined to very small area posteriorly and ventrally (some *B. depressa*) 11
- 11 ST5 flap (Fig. 55) with a broad, evenly rounded shallow concavity affecting most of the hind edge; each posterolateral corner rounded at tip, the base of the ST5 flap much narrower than the width distally; fore tibia with one or two weak spine-like setae on ventral surface of proximal fourth, strongest at most three quarters of tibial width; fringe on lower half of hind tibiae weak, consisting of about 10 widely set long thin setae on *av* surface, hardly affecting *v* surface, not reaching *pv* surface *Bengalia depressa* Walker
- ST5 flap with a conspicuous medial V- or U- (or even almost O-) shaped excavation at the middle of the hind edge only, rarely reduced to a small nick 12
- 12 ST5 flap with medial U-shaped excavation of variable width and depth; the hind edge lateral to the excavation evenly rounded (Figs. 86, 87); fore tibia with distinct spine-like setae ventrally in proximal half; hind tibia with a dense fringe of long thin setae on the lower two thirds of *av*, *v* and *pv* surfaces *Bengalia floccosa* (Wulp)
- ST5 flap with a posterior medial excavation, the corners between the lateral walls of the excavation and the hind edge usually rather sharp, likewise the corner between the hind edge and the lateral edges usually rather sharp, sometimes there is only a nick in the hind edge; fore tibia with or without ventral spine-like setae; fringe on hind tibiae usually extensive, but not or only slightly invading *pv* surface 13
- 13 Fore tibia without or with extremely weak and short ventral spine-like setae in proximal half; hind tibia with a less dense fringe of long thin setae on the lower two thirds or lower half of *av* and *v* surfaces, not reaching the *pv* surface; excavation in hind edge of ST5 flap variable (Figs. 163–165), the excavation varying from a shallow V (or a small nick), to a U, to an almost circular hollowing-out with a narrow opening (in holotype of *B. cuthbertsoni*); the hind edge a little more oblique than in *B. gailardi* *Bengalia tibiaria* Villeneuve

- Fore tibia with a row of strong ventral spine-like setae on proximal third, strongest about as long as diameter of tibia; fringe present on lower two thirds of hind tibiae, rather dense on *av* and *v* surfaces, usually also affecting the *pv* surface slightly; ST5 flap with a conspicuous medial U-shaped, sharply set-off excavation in the middle third of the hind edge, the lateral parts of the hind edge usually forming two sharp corners on each side, one at the exit of the excavation, the other towards the lateral edge of ST5 flap; the hind edge of the ST5 flap rather transverse (Fig. 106) *Bengalia gaillardii* Surcouf & Guyon

***Bengalia peuhi* species-group**

***Bengalia peuhi* subgroup**

Rognes (2009: 15) defined a monophyletic *Bengalia peuhi* subgroup within the *Bengalia peuhi* species-group on the basis of an aedeagus with a prominent upper lip, a small lateral finger, a rounded anteroventral corner of the external hypophallic lobes, and long thin antlers. It was thought to consist of the Afrotropical species *B. peuhi* Villeneuve, 1914 and *B. minor* Malloch, 1927. At the same time the antlers were characterised as “denticulate at the tip in *B. peuhi*”, an error of fact, based on an unjustified interpretation of the drawings of the aedeagus published by Lehrer (2005). This is discussed in more detail under *B. peuhi*, below.

Since 2009 I have become aware of a few other crucially important features characterising this subgroup. First, both species have 1–2 prominent *pd* setae on the hind tibia, a feature first described by Malloch (1927). Secondly, they also have the anepimeron clothed by yellow setulae only, no black setulae being present.

A third oversight on my part in my revision of the Oriental species of the *B. peuhi* species-group (Rognes 2009) concerns the species *B. unicolor* Ségué, known only from the holotype from Pakistan. I had overlooked the presence in the holotype of 2 *pd* setae in the proximal half of the right hind tibia and 1 *pd* seta in that position on the left hind tibia. Interestingly, both *pd* setae on the right hind tibia are clearly visible in fig. 208 (p. 66) of my revision, the lower one between the two strong *av* setae and the upper one above the uppermost *av* seta. For this reason it is clear that *B. unicolor* also belongs in the *B. peuhi* subgroup of the *Bengalia peuhi* species-group. This classification finds additional support in the structure of the distiphallus, which shares many of its unique features with the one of *B. peuhi* and *B. minor*. Thus, the *B. peuhi* subgroup has members in both the Oriental (*B. unicolor*) and the Afrotropical Regions (*B. minor*, *B. peuhi*).

Character states shared between the members of this subgroup are as follows:

- (1) parafacial with no dark spot in upper part;
- (2) frons yellow, frontal vitta with numerous conspicuous setulae;
- (3) lunula bare in *B. peuhi*, bare or setose in *B. minor* and *B. unicolor* (Rognes 2009);
- (4) anepimeron with yellow setulae only;
- (5) *ia* 0+1 (*lepineyi* HT), usually 0+2;
- (6) small stout setae ventrally in proximal half of fore tibia, except in *minor* where they may be absent;
- (7) hind tibia with 1–2 *pd* setae at proximal third;
- (8) all tibiae with fringes distally;
- (9) a conspicuous and striking row of stout short setae on (almost along) the whole *pv* surface of mid femur as a continuation medially of the distal *pv* ctenidium, longest setae much shorter than femoral diameter (at most 0.5x);
- (10) ST5 flap rectangular, short (half as long as wide) in *B. minor*, small irregularities (nicks) in its hind edge in *B. peuhi*; upturned and drawn-out posterolateral corners in *B. unicolor*;
- (11) process of the bacilliform sclerite a strong but narrow upturned hook;
- (12) distal margin of upper lip weakly convex in dorsal view;
- (13) upper lip almost flat as seen from front (apical view), not concave below;
- (14) presence of two diverging lines of sclerotisation on upper lip, reflecting presence of vertical supporting structures below it, latter is triangular in lateral view of distiphallus;
- (15) long and narrow antlers, in *unicolor* directed anterodorsally;
- (16) no basal tooth on antler;
- (17) a varying number of sometimes extremely small tines on the tip of the antler, sometimes larger and less difficult to make out (e.g. Fig. 32);
- (18) dorsolateral wing of distiphallus in front view varying from very upright (*B. unicolor*), to forming a right angle with each other; a horizontally directed lateral part visible in *B. minor* in dorsal and ventral views;
- (19) very small lateral finger, with reduced number of denticles;
- (20) converging internal hypophallic lobes;
- (21) ventral finger rounded in lateral view.

1. *Bengalia minor* Malloch, 1927

Figs. 1–19.

Bengalia minor Malloch, 1927: 408. Holotype male (MNHN, examined), by original designation. Type locality: Mali, Yélimané [15°07'08.40"N, 10°34'16.21"W] (de Zeltner leg.) (Fig. 8).

Note. Malloch misinterpreted the handwritten label text when citing the locality as “Yéliméné”. It is clearly spelt “Yélimané” on both the holotype and the paratype labels (Figs. 8, 9).

Bengalia lepineyi Ségué, 1935: 132. Holotype male (MNHN, examined), by monotypy. Type locality: Mali (as “Soudan” [i.e., French Sudan]), Sokolo [14°44'22.56"N, 6°07'12.83"W], Cercle de Macina (de Lepiney leg.) (label shown in Fig. 19).

Note. Ségué did not state how many specimens he had before him when describing the species. He described the male sex, and said the female was unknown. He did not use the word type or other similar expression to refer to the specimen before him. There is only one specimen in MNHN under *B. lepineyi* and I interpret the specimen as holotype fixed by monotypy (cf. Rognes 2009 p. 52 under *B. unicolor*). I have labelled it as “HOLOTYPE (by monotypy)”.

Ségué described the ST5 flap as “étranglée à la base et sinueuse à l’apex” (p. 132, in main description), and the ST5 itself as “en croissant à l’apex” (p. 133, in key). He illustrated the ST5 flap in the upper left figure of his fig. 3 on p. 134. Examination of the holotype revealed that Ségué’s descriptions and figure do not apply to the ST5 flap but to the hind half of the cerci freely exposed behind the hind edge of the transverse and true ST5 flap (Fig. 7). It is astonishing that the artist making the drawing (Ségué himself?) could misinterpret the setose hind ends of the cerci as the ST5 flap, which is always without setae. The drawing shows a deep excavation in the hind edge and as being narrow basally, just as the proximal ends of the cerci appear in ventral view. Nevertheless, Ségué (1935: 132) clearly thought his *B. lepineyi* to “ressemble étroitement au *Bengalia minor* Malloch par les caractères chétotaxique et chromatiques”. The true ST5 flap of the holotype as it appears in the microscope after dissection (Fig. 18) is rectangular and very short, exactly as figured for *B. minor* by Malloch (1927: 406 fig. 10c).

Bengalia lepineyi: Zumpt 1956: 175, 173 fig. 103.

Note. Zumpt reproduced Ségué’s figures of the alleged ST5 flap, miscited the country given by Ségué (“Soudan”) as “French Congo”, and repeated Malloch’s misspelling of the locality.

Bengalia minor: Pont 1980: 791. Catalogue entry. The reference to “Congo” may have been taken from Zumpt (1956).

Bengalia lepineyi: Pont 1980: 791. Catalogue entry as a new synonym under *B. minor*.

Afridigalia minor: Lehrer 2005: 54. Recorded from Chad and Sudan.

Bengalia lepineyi: Rognes 2006: 458.

Note. Rognes here disagreed with the synonymy of *B. lepineyi* under *B. minor* made by Pont (see earlier entry) because of the apparent mismatch between the published figures of the ST5 flap (by Malloch, Ségué and Zumpt). As pointed out above, the structure figured by Ségué (1935) and Zumpt (1956) of an alleged ST5 flap is not that structure at all, but the hind end of the cerci emerging from under the hind edge of the true ST5 flap. The latter is difficult to observe in the holotype of *B. lepineyi* because of its yellow colour and transparency (Figs. 7, 18, before and after dissection).

Afridigalia minor: Lehrer 2006: 8. Recorded by Lehrer from Chad, Malawi (as Nyassaland) and Sudan.

Diagnosis. Male. Length: 9mm (n=2). [Lehrer (2005: 55) gives 10mm]. Frons at vertex / head width ratio: 0.33–0.34 (mean 0.33, n=2). A very pale species recognisable among *peuhi* subgroup members by the shape of the ST5 flap in combination with a yellow epandrium. Lunula bare (holotype) or setose (male from Nigeria in CNC has three black setulae on lunula).

Fore tibia without (holotype of *B. minor*) (Fig. 1) or with 2–3 strong but short *v* spine-like setae near middle, hardly half as long as tibial diameter (holotype of *B. lepineyi*, paratype of *B. minor*, specimen from Nigeria in CNC) (Figs. 2–4). A few erect *pv* setae on distal fifth forming an indistinct fringe. Mid tibia with a fringe of long setae on distal half of *v* and *pv* surfaces, also invading *av* surface to a slight degree. Hind tibia with a single *pd* seta a little above middle (*B. minor* holotype, *B. lepineyi* holotype), in the holotype of *B. lepineyi* a very small additional *pd* seta a little above it. Distinct fringe of long setae on distal two thirds or more of *a*, *av* and *pv* surfaces. Basitarsus on hind leg without long *av* setae, setae in this position not remarkable, opposite the condition in *B. peuhi* and *B. unicolor*.

T5 with 1–2 medial and 1–3 lateral discal setae [4 discals in *B. minor* holotype; 5 in *B. minor* paratype (2 on left, 3 on right side), 3 in *B. lepineyi* holotype (2 lateral and a single medial discal; second medial discal absent), 5 in specimen from Nigeria (3 on left, 2 on right side)]. Epandrium yellow.

ST5 flap a short, transverse piece, half as long as wide.

Cerci shining dark brown prongs, slightly curved as seen in lateral view. Lower bacilliform sclerite with a medial projection near its lower end (Fig. 12).

Distal part of external hypophallic lobes projecting laterally outside of proximal part of that lobe, as seen in ventral view of distiphallus. Lateral finger small, not projecting beyond outer / lateral edge of distal part of external hypophallic lobe as seen in ventral view. Dorsolateral wings as seen from front of aedeagus forming an angle of

slightly less than a right angle, the outermost part of the wings rather horizontal, transparent and visible in dorsal view of the aedeagus; their distal edges widest apart about at level of distalmost part of external hypophallic lobe. Antler tip with 2–3 small tines close together.



FIGURES 1–9. *Bengalia minor* Malloch, male (1, 8 from holotype of *B. minor* in MNHN; 2, 9 from paratype of *B. minor* in MNHN; 3, 5, 7 from holotype of *B. lepineyi* in MNHN; 4, 6 from male from “Mali / Adrar des Iforas / sept. oct. 1986 / Ehya ag Sidiyanae rec” in MNHN). **1, 2.** Left fore tibia. **3, 4.** Right fore tibia. **5.** Right hind tibia, anterodorsal view. Arrows point to *pd* setae. **6.** Left hind tibia. **7.** Tip of abdomen, ventral view (before dissection). **8.** Labels. **9.** Labels.

Female. Length: 9.5mm (n=1). Frons at vertex / head width ratio: 0.36 (n=1). In CNC there is a female from Nigeria with the same capture data as a male *B. minor*, which I refer to this species. The setae on the legs and the abdomen are strikingly stout, remarkably on the dorsal side of the fore femur. T5 has 3 strong discal setae on left side, 4 on the right side. The marginal setae on T5 are also strong (4 on left, 5 on right side). The vestiture of the ST2–5 is very similar to that of *B. peuhi*, perhaps the setae are even shorter and stubbier. The tip of the ovipositor has only “soft” setae, no spine-like stiff ones. The frons is rather broad.

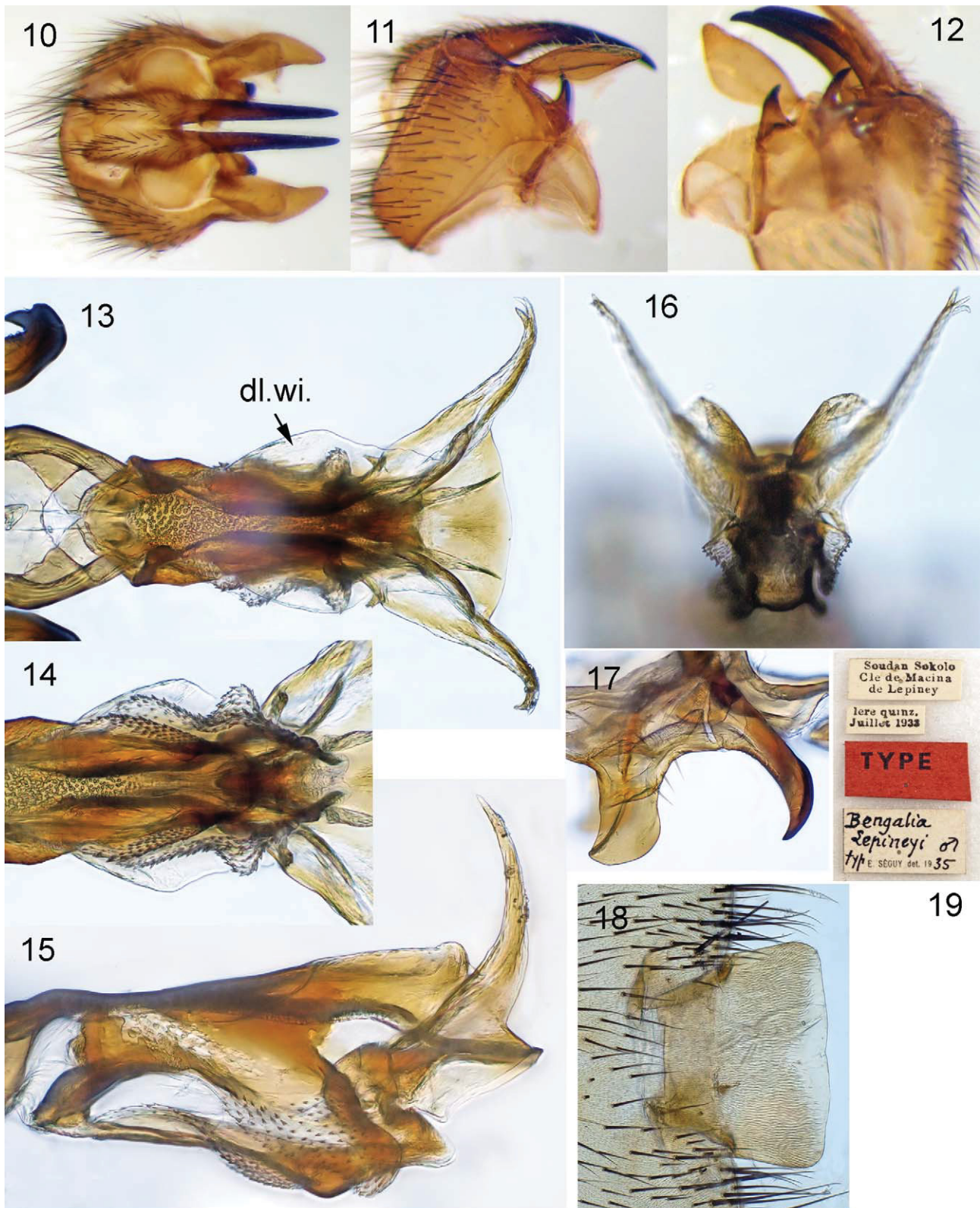
Discussion. The misunderstandings of Séguy (1935) concerning the true structure of the ST5 flap is discussed above under the entry for *B. lepineyi* in the synonymy above. Lehrer’s figure (2005: 55 fig. 22C) shows a quite prominent bifurcation at the tip of the antler, and in the key on p. 23 he describes the antlers as “minces, courtes et apparemment [sic] bifides au bout”. By using the word “apparemment” he appears not to have made up his mind about the real structure of the antler tip. My own dissection of the *B. lepineyi* holotype shows at most three extremely tiny tines on the tip of the antlers (Fig. 16). Malloch’s figure (1927: 406, fig. 10b) does not show a bifurcation like the one figured by Lehrer, but a simple pointed structure. Malloch perhaps overlooked the very tiny tines (tags) on the antler tip.

Biology. Capture dates in the material I have seen are from June, July and September / October. Lehrer (2005, 2006) reports capture dates from October and December. Nothing else is known about the biology of this species.

Distribution. Chad, Malawi, *Mali, *Nigeria, Saudi Arabia (Dawah & Abdullah 2009) and Sudan.

Material examined. Type material. *Bengalia minor* Malloch, 1927. **Holotype** male, in MNHN, labelled (1) MUSEUM PARIS [black print on blue label]; (2) TYPE [black print on red label]; (3) Yèlimané / de Zeltner [black handwriting]; (4) *Bengalia* / (*Ochromyia*) / *minor* / Type / Det. JRMalloch [handwritten by Malloch except last line which is printed on white label with black margin] (labels 2–4 shown on Fig. 8). Dissected by Malloch who must have used this specimen for his illustrations (Malloch 1927: 406 figs 10a–10c). The abdominal T4–6 and ST4–5 including the ST5 flap are glued to the tip of the blue museum label uppermost on the pin, but the genitalia are not

present. Specimen in good condition with all legs intact. **Paratype.** MNHN: 1 male labelled: (1) MUSEUM PARIS [black print on blue label]; (2) Yèlimané / de Zeltner [black handwriting]; (3) TYPE [red print on white label]; (4) *B. minor* [handwritten in pencil] (Fig. 9). Not dissected.



FIGURES 10–19. *Bengalia minor* Malloch, male (all from holotype of *B. lepineyi* in MNHN). **10.** Cerci and surstyli, posterior view. **11.** Cerci and surstyli, lateral view. **12.** Cerci and surstyli, oblique, internal view. **13.** Distiphallus, dorsal view. **14.** Distiphallus, ventral view. **15.** Distiphallus, left lateral view. **16.** Distiphallus, apical view. **17.** Pre- and postgonites, left. **18.** ST5 flap (after dissection). **19.** Labels.

Bengalia lepineyi Séguy, 1935: 132. **Holotype** male, in MNHN, labelled (1) Soudan Sokolo / Cle [= Cercle] de Macina / de Lepineyi [printed]; (2) 1ere quinz. / Juillet 1933 [printed]; (3) TYPE [black print on red label]; (4) *Bengalia* / *Lepineyi* ♂ / typ E. SÉGUY det. 1935 [handwritten by Séguy, but last line printed except “typ” and “35” which are also handwritten] (Fig. 19); (5) “HOLOTYPE / *Bengalia* (m) / *lepineyi* / Séguy, 1935: 132 / (by monotypy) / K. Rognes 27.v.2011” [printed on red label]. I have dissected the specimen. The dried abdominal tergites T1–5 are glued as a unit to a card above other labels; the genitalia are kept in glycerol in a glass microvial below the labels. The single specimen is in good condition, and all legs are intact. Pin heavily corroded above and below specimen.

Other material. CNC: Nigeria: 1 male labelled (1) N.NIGERIA / Kano State / Dambatta / VI – 30 – 73 / C.R.Hergert [lines 3 and 4 handwritten]; (2) *Bengalia* / sp. [handwritten]; (3) *Bengalia minor* / Malloch, 1927 ♂ / Det. T. I. Tantawi [handwritten]; (4) My determination label. • 1 female labelled (1) N.NIGERIA / Kano State / Dambatta / VI – 30 – 73 / C.R.Hergert [lines 3 and 4 handwritten]; (2) May be the ♀ / of *B. minor* ?? / T. I. Tantawi; (3) My determination label. **MNHN: Mali:** 1 male labelled (1) Muséum Paris / Mali Adrar des Iforas / sept. oct. 1986 / Ehya ag Sidiyanae / Rec [handwriting on blue label, first line printed]; (2) *Bengalia* / minor Malloch / N.P.Wyatt det. 1987 [handwritten, last line is printed, except for handwritten last digit]; (3) My determination label.

2. *Bengalia peuhi* Villeneuve, 1914

Figs. 20–42.

Auchmeromyia peuhi Brauer & Bergenstamm, 1891: 420 [as “*Peuhi* Mcq. Senegal” under “*Auchmeromyia* S. in litt. n.”], 436 [as “*Peuhi* Mcq. Type. (Bigt.) M.C. (*Ochromyia*) *Auchmeromyia* Br.Bgst. Senegal.”]. *Nomen nudum*.

Note. The name as introduced by Brauer & Bergenstamm was possibly based on a specimen labelled *peuhi* by Macquart [an unpublished Macquart name] from Senegal in NMW (M.C. = museum collection). The expression “*Peuhi* Mcq. Type. (Bigt.)” seems to indicate that such a specimen was present in the Bigot collection, of which many specimens were lent out to Brauer (cf. Brauer 1897, 1898, 1899) from Verrall, who had acquired Bigot’s collection in 1893 (A.C. Pont, pers. comm.). However, according to the handwritten list (in OUMNH) that Verrall made of the contents of the Bigot collection at the time of the acquisition, there is no mention anywhere of a specimen named “*peuhi*” in the collection (A. C. Pont, pers. comm.; I have also seen a copy of parts of the pdf file made from Verrall’s list). Perhaps the specimen is in NMW. Whatever the case, Brauer & Bergenstamm provided no description or indication in words on how to distinguish the species; hence their name is a *nomen nudum*.

Bengalia peuhi Villeneuve, 1914: 253. Lectotype male (BMNH, examined), by present designation. Type locality: Zambia, Mazabuka.

Note. I have discussed possible syntypes and the lectotype designation below, under Type material.

Bengalia (*Ochromyia*) *peuhi*: Malloch 1927: 408. Burkina Faso (as Haute Volta), Djibouti (locality of Obok), Ethiopia (as Abyssinia), Ghana (as Gold Coast), Kenya (as B.E.A.), Malawi (as Nyasaland).

Bengalia peuhi: Séguy 1933: 79. Mozambique.

Bengalia bekilyana Séguy, 1935: 132. Lectotype male (MNHN, examined) by present designation. Type locality: Madagascar (Bekily) (MNHN). For details, see below under Type material.

Bengalia peuhi: Zumpt 1956: 175. Botswana (as Bechuanaland), Ethiopia (as Abyssinia), Ghana (as Gold Coast), Kenya, Malawi (as Nyasaland), Mozambique (as Port. E. Africa), Namibia (as South West Africa), Nigeria, Somalia (as Somaliland), Sudan, Zambia (as South Rhodesia), South Africa (as Transvaal).

Bengalia peuhi: Séguy 1958: 153. Burkina Faso (as Haute Volta), Djibouti (as Obock), Ethiopia (as Abyssinie), Mozambique.

Bengalia peuhi: Zumpt 1962a: 65. Madagascar.

Bengalia bekilyana: Zumpt 1962a: 65, as synonym of *Bengalia peuhi*.

Bengalia peuhi: Pont 1980: 791. Catalogue entry.

Afridigalia elgonia Lehrer, 2005: 34. Holotype male (BMNH, not examined), by original designation. Type locality: Uganda.

Note. Synonym according to Rognes, 2006: 466.

Afridigalia olapana Lehrer, 2005: 60. Holotype male (TAU, not examined), by original designation. Type locality: Kenya (TAU).

Note. Synonym according to Rognes, 2006: 466.

Afridigalia arawakia Lehrer, 2006: 2. Holotype male (BMNH, not examined) by original designation. Type locality: Unknown.

Note. Synonym according to Rognes, 2009: 15. The holotype is labelled as being from Kew Park, Jamaica, but is very likely a mislabelled specimen from the Old World tropics (Nigel Wyatt, pers. comm.).

Afridigalia peuhi: Lehrer 2005: 61. Kenya, Nigeria, South Africa.

Afridigalia peuhi: Lehrer 2006: 9. Madagascar, Malawi (as Nyassaland), Nigeria, Senegal, South Africa, Sudan, Tanzania, Togo, Zimbabwe.

Afridigalia elgonia: Lehrer 2006: 7. Kenya, Sudan. Lehrer also reported a male from “Japon” (“Place Soba, ... coll. Sanousi”), but that is an error. The specimen, which is in BMNH, is labelled “Place: Soba / Host: Termite tunnels / Date: 23.8.76 / Coll. Sanousi” with no mention of Japan. The collector may be Prof. Sulieman Mohamed El Sanousi from the University of Khartoum, so the specimen is likely to be from Sudan (Nigel Wyatt, pers. comm.).

Afridigalia olapana: Lehrer 2006: 9. Gambia, Kenya, Malawi (as Nyassaland), Nigeria, Sudan, Tanzania, Togo, Zimbabwe.

Bengalia peuhi: Kurahashi & Kirk-Spriggs 2006: 62–63. Namibia. I have examined all the listed material. For details, see under Material examined, NMNW, below.

Bengalia gaillardi: Kurahashi & Kirk-Spriggs 2006: 62. Female specimen from Kaross (Namibia) only. Misidentification, not *gaillardi* Surcouf & Guyon.

Bengalia spinifemorata: Kurahashi & Kirk-Spriggs 2006: 63. Six males and eleven females from Ugaranm, Sonderwater, Upper Hungorob ravine, Upper Hungorob, Hungorob ravine, Regenstein (Namibia) only. Misidentifications, not *spinifemorata* Villeneuve.



FIGURES 20–24. *Bengalia peuhi* Villeneuve, male (all from Madagascar, Andobo, in MNHN). **20.** Right fore tibia, posteroventral view. **21.** Left mid tibia, anterodorsal view. **22.** Left mid tibia, posterodorsal view. **23.** Left hind tibia, anterodorsal view. **24.** Left hind tibia, posterodorsal view.

Diagnosis. Male. Length: 10–13.5mm (n=11). Frons at vertex / head width ratio: 0.31–0.34 (mean 0.32, n=14). A pale species recognisable among *B. peuhi* subgroup members by the shape of the ST5 flap. In most countries the epandrium is shining black, but almost all males from Namibia have a yellow epandrium.

Lunula bare. Fore tibia with a group 3–7 densely set strong spine-like setae, the longest setae are the ones distalmost in the row, longest seta varying from about half as long as width of tibia to as long as width of tibia; these setae much smaller in some males in a series from Madagascar, almost minute; other males from Madagascar have strong fore tibial spine-like setae; the setae always sit on a longish slightly swollen base. Hind tibia with 1–3 pd setae in proximal half, the uppermost weak. Basitarsus with an anteroventral fringe of long setae, longer than diameter of the basitarsus (Fig. 23) (cf. Villeneuve 1914: 254, “protarse”), a feature shared with *B. unicolor* (cf. Rognes 2009: 52). Fringes present posteroventrally on the distal half of fore tibia, anteroventrally, ventrally and posteroventrally on distal half of mid tibia, and anteroventrally, ventrally and posteroventrally on distal three fourths of hind tibia.

T5 with a single pair of discal setae (in series of males from Madagascar), or with a more or less regular transverse row of 3–7 discal setae (seen in mainland Afrotropical material). The lectotype has a transverse row of 6–7 discals. According to Lehrer’s description of his *Afridigalia elgonia* from Kenya and Uganda it has a transverse row of 6 discal setae on T5. Lehrer’s *Afridigalia olapana* from Kenya has only single pair of discals on T5. Margins of abdominal tergites without or only with small traces of darkening; some specimens have very broad bands of darkening, about 1/3–2/5 of the segment length and very dark on T3–T5, slightly narrower on T1–2

(males from Madagascar). T5 in one exceptional case without discal setae altogether, see below under specimen from Malawi in BMNH (Davey leg.). Epandrium shining black or dark brown (sometimes yellow in material from Namibia).

ST5 flap, longer than broad, with roughly parallel, but slightly concave lateral edges, these sometimes diverging somewhat towards the base, and a slightly concave hind edge, the latter sometimes with a narrower notch in middle.

Cerci long and curved. No medial projection of lower bacilliform sclerite (cf. *B. minor*).

Distiphallus with dorsolateral wings invisible in dorsal or ventral view. Lateral finger projecting to about outer limit of distal hypophallic lobe as seen in ventral view. In specimen illustrated (Fig. 30) it projects beyond this limit because of the weakly projecting distal part of external hypophallic lobe. Distal part of external hypophallic lobe usually at level with or projecting beyond outer limit of proximal part in ventral view. The illustrated specimen (Fig. 30) has an unusually weakly projecting distal part of the hypophallic lobe. Antlers curving upwards, distally with a few tines (Fig. 32); in some specimens the tip is provided with numerous exceedingly small irregularities, very difficult to make out, even when examined in a microscope with high magnification. Lowermost tine on antler about one third from tip.

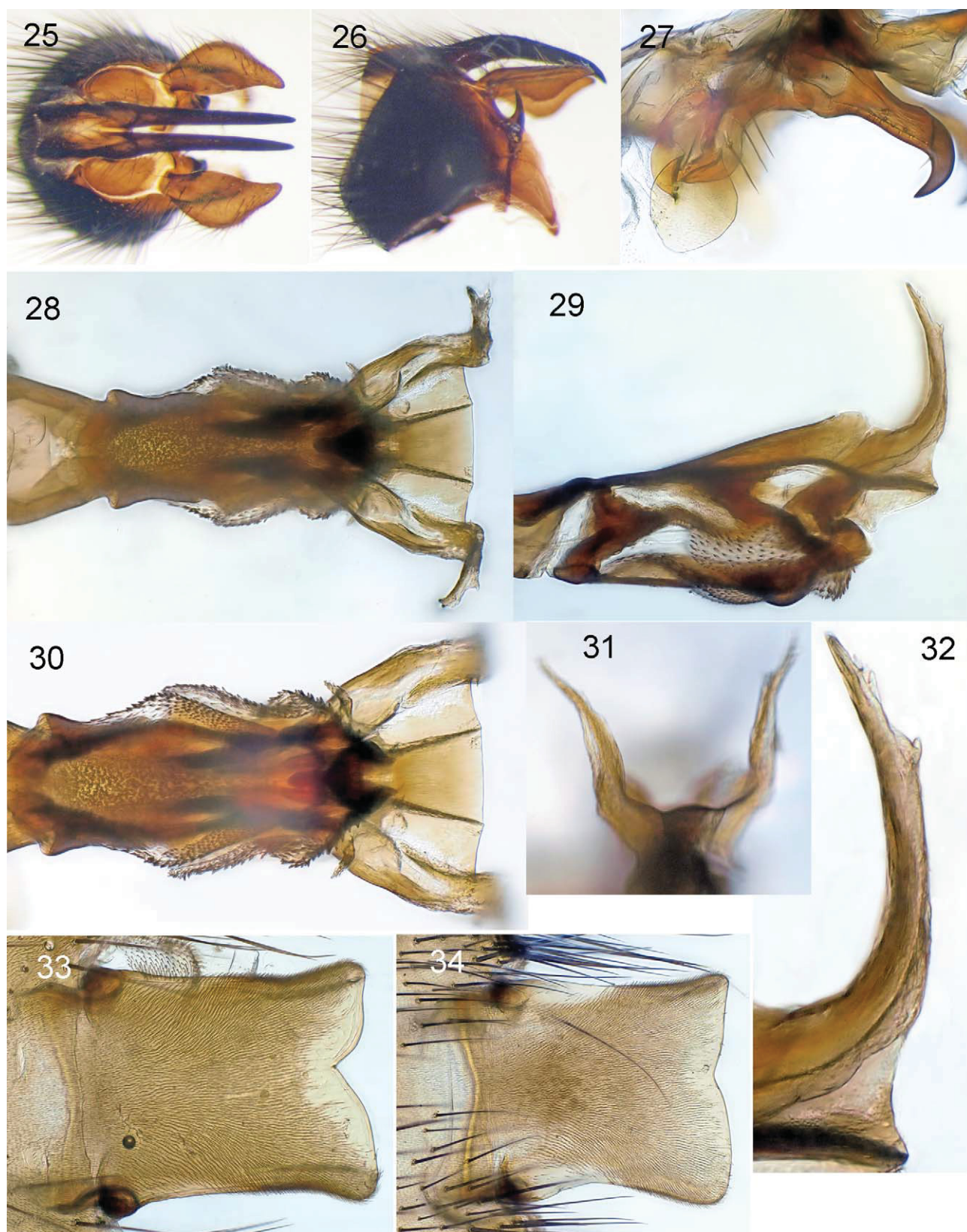
Female. Length: 9–13mm (n=10). Frons at vertex / head width ratio: 0.31–0.35 (mean 0.33, n=10). T5 with only 2 discal setae in most female specimens from Madagascar and a few small erect laterodiscals far on each side; in mainland Afrotropical specimens usually with a more or regular transverse row of 4–12 discals, the lateral discals irregularly placed. ST2–ST4 broader than long; ST3 half as long as ST2. ST2 with a group of 2–3 widely separated lateral marginals on each side, those beside it on its outside weaker, but usually no setae between them. ST3 with about 6 similar marginals, lateral edge also with black setae halfway towards middle. ST4 also with about 6–8 marginals and with small setae along whole lateral edge. ST5 triangular, with a rounded hind end, with small black setae along entire margin, 2 stronger setae distally. Disc of all sternites clothed with pale ground setulae. T6 reduced to sclerotisations around spiracles 6 and 7. T7 in form of elongate rods. T8 in form of broad plates, almost square in lateral view. ST6 almost completely divided by an oval unsclerotised area in distal three fourths. ST7 completely divided into two sclerites, narrow basally and broad distally. ST8 with diverging parts proximally, distally a single upturned vertical part with numerous setae. Epiproct and cerci straight, short and with soft setae only, no spinous setae as in *B. gaillardi*. Distal part of vaginal tube with a strong sclerotisation (v.s.) in the lateral wall on right side.

Discussion. Séguy (1935) described the ST5 flap (“la pièce apicale” of the “[c]inquième sternite”) of *B. bekilyana* as “trapézienne” opposite its condition in *B. peuhi*, described as “subquadrangulaire à l’apex”. His drawings show the ST5 flap of *B. peuhi* to have parallel sides and a slightly concave distal margin, whereas the ST5 flap in *B. bekilyana* is shown with a much narrower base than the concave distal margin. Close examination of the ST5 flap in the dissected lectotype of *B. bekilyana* with a compound microscope reveals that the lateral edges are parallel, but their basal halves are very sparsely microtrichiose or even without microtrichiae, making the flap appear, under a stereomicroscope, narrower at base than distally where the microtrichiae cover the flap to a much stronger degree. This has obviously misled Séguy into drawing the flap rather narrow at base, thus “trapézienne”.

Lehrer’s (2005, 2006) *Afridigalia elgonia*, *A. olapana* and *A. arawakia* (latter not even diagnosed, but accepted by him as Neotropical taxon) are based on very slight variations in the detailed shape of the ST5 flap. I do not accept these differences as sufficient for distinguishing separate species. Regarding the antler of the distiphallus, Lehrer (2005: 35 fig. 12C [*elgonia*]; 61 fig. 25C [*olapana*]; and 63 fig. 26C [*peuhi*]) and Lehrer (2006: 3 fig. 1C [*arawakia*]) figure the antler tip as terminating in a kind of small narrow “brush” composed of numerous small hair-like projections. I misunderstood the drawings to the effect that the small points (or more exactly, the numerous small strokes of the pen) making up the “brush” were meant to represent denticles (hence my term “denticulate”, cited above), i.e., microscopic structures similar to the ones that cover the lateral finger for example in *B. fani* Feng & Wei in Feng *et al.*, 1998 (Rognes 2009: 32 fig. 57; 2011a: 25 fig. 60). After having examined several *B. peuhi* specimens first hand, I can state with confidence that this is absolutely not the case. They are not denticles or hairs, but simply minute projecting differentiations of the external membrane of antler tip, just like, though much smaller, than the ones in e.g. *Bengalia emarginata* Malloch or *B. emarginatoides* Rognes figured in Rognes (2009: figs. 17, 28).

One male from Malawi in BMNH lacks discal setae on the T5 altogether (more details on the specimen can be found below under Material examined). This is an extremely interesting observation, and made me decide that the

female holotype of *B. africana*, also lacking T5 discals, most likely is an aberrant individual of a very commonly collected species.



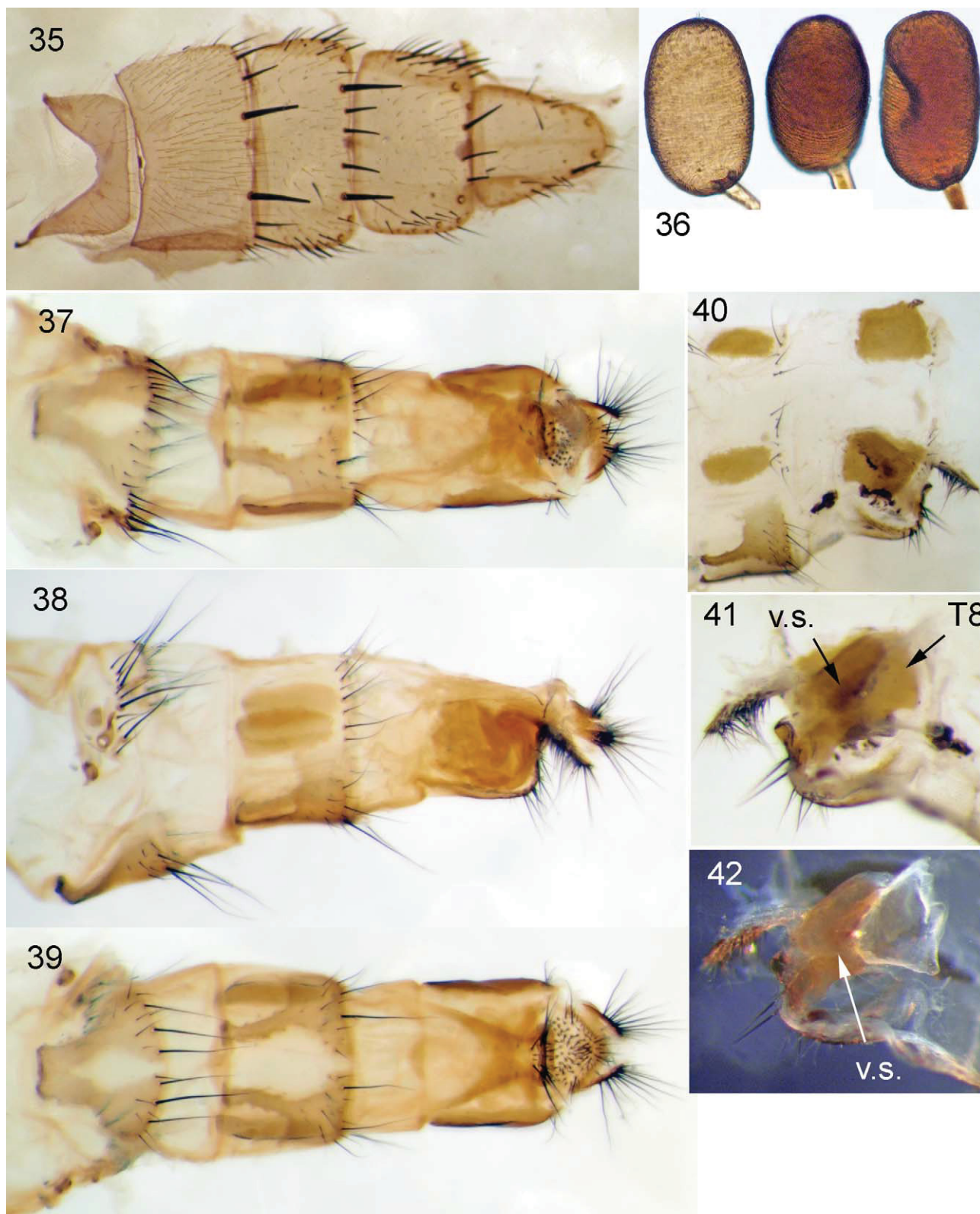
FIGURES 25–34. *Bengalia peuhi* Villeneuve, male (25, 26, 28–33 from Madagascar, Sept Lacs; 27, 34 from Madagascar, Andobo, both in MNHN). **25.** Cerci and surstyli, posterior view. **26.** Cerci and surstyli, lateral view. **27.** Pre- and postgonites, left. **28.** Distiphallus, dorsal view. **29.** Distiphallus, left lateral view. **30.** Distiphallus, ventral view. **31.** Distiphallus, apical view. **32.** Distiphallus, details of left antler, lateral view. **33.** ST5 flap. **34.** ST5 flap.

Biology. The material I have examined, including all the material from Namibia published by Kurahashi & Kirk-Spriggs (2006) and revised by me, has been captured in all the months of the year.

Distribution. Botswana, Burkina Faso, Djibouti, Ethiopia, Gambia, *Ghana, Kenya, *Madagascar, *Malawi, Mozambique, *Namibia, Nigeria, *Senegal, Somalia, *South Africa, *Sudan, Tanzania, Togo, Uganda, *Zambia, Zimbabwe. Also reported from Mali and Yemen by Kurahashi & Kirk-Spriggs (2006) and from Oman, United Arab Emirates and Yemen by Deeming (1996, 2008) [and, doubtfully, from Japan and Jamaica by Lehrer (2006)].

Material examined. Type material. *Bengalia peuhi* Villeneuve, 1914: 253. Villeneuve described *B. peuhi* on the basis of an unspecified number of male and female specimens from "Transvaal; N.E.Rhodesia; Nigeria; Afrique orientale anglaise; Somaliland, Août-janvier" among material sent to him from the Imperial Bureau of Entomology. He headed the *peuhi* entry as "B. Peuhi B. et B. sec. typ." thus referring to Brauer & Bergenstamm (1891). According to what the Code says about bibliographic reference (Article 72.4.1 of ICZN 1999), the material before Brauer & Bergenstamm when they published the name *peuhi* should also be reckoned as belonging to the type series of *B. peuhi* Villeneuve, even though *peuhi* Brauer & Bergenstamm, 1891 is a *nomen nudum*. I have found possibly syntypic Villeneuve material in BMNH and OUMNH. One syntype in BMNH is here designated as lectotype (see below) to fix the interpretation of the name. There are six specimens (4 males and 2 females) in OUMNH (ex coll. Bigot, under "*Bengalia depressa*") that have been identified by Villeneuve as *B. peuhi* ["*Bengalia* ... *Peuhi* BB. sec. Typ."] (more on all the specimens once under *depressa* below under treatment of *B. depressa*). Of these, 3 males and 1 female are labelled to be from Senegal and 1 male labelled to be from Khartoum [Sudan] (the second female has no locality label). None of these localities are mentioned in Villeneuve's paper and no specimens carry labels indicating their original provenance from the Imperial Bureau of Entomology. Neither can I find any mention in Brauer & Bergenstamm (1891) under *peuhi* that they studied specimens originally placed under *depressa* in Bigot's collection. The six specimens have labels reading "Ph. depressa / EX. COLL. BIGOT" (the first line is handwritten) indicating that Bigot had placed them under that name in his collection. Verrall's handwritten list (in OUMNH) of the contents of the Bigot collection, made when he acquired it, lists 18 specimens under "*Phumosiya depressa*" and 1 specimen under "*Bengalia depressa*". None of them are marked as having been sent to Brauer, opposite the case with numerous other species in the list. This means that these specimens were never seen by Brauer & Bergenstamm. In addition, these OUMNH specimens are certainly not syntypes, since none of the localities are mentioned in Villeneuve's 1914 paper. The specimen which is possibly labelled with a Macquart manuscript name and which is cited by Brauer & Bergenstamm under *Auchmeromyia peuhi* (more details in the first entry in the synonymy, above) may be lost or is still present in NMW. I have not examined it. **Lectotype** male, by present designation, in BMNH labelled (1) SYN- / TYPE [printed on circular label with a light blue rim]; (2) 12/12/13 // Mazabuka // N.W. Rhodesia // 3400 (R.C.W.) // In house [handwritten on circular cardboard label]; (3) *Bengalia* / Dr Villeneuve det. / *Peuhi* BB / sec. Typ. [handwritten in Villeneuve's hand, except line 2 which is printed, on blue label]; (4) Det. Dr. Villeneuve / Pres. by / Impl. Bur. Ent. / 1919—108 [printed]. The locality is in the Southern province of Zambia, quite near the centre of the old Rhodesia, covering the combined area of present day Zimbabwe and Zambia. According to label (4) the specimen originally belonged to the Imperial Bureau of Entomology and was subsequently presented to the BMNH in 1919. Even though Villeneuve writes "N. E. Rhodesia" and the label reads "N.W.Rhodesia" I accept it as a syntype. I have labelled it and here designate it as lectotype of *Bengalia peuhi* Villeneuve in order to fix the interpretation of the name. The specimen, staged on a piece of yellow celluloid, fits the description. All legs are present but the tarsi are lacking on both mid legs and the distal four tarsomeres are lacking on the left hind leg. The darkened hind margins of the abdominal tergites are very faint. The ST5 flap is very similar to the one shown in Fig. 34. I have not dissected it. I have not made any attempt at tracing the remaining syntypes.

Bengalia bekilyana Séguy, 1935: 132. According to Séguy's text he had both males and females before him when describing the species, thus syntypes, but he did not indicate how many specimens of either sex. Neither did he use the word "Type", or "Holotype" or similar expression to indicate selection of a holotype. In MNHN there are two specimens under *Bengalia bekilyana*, one of each sex. Both fit the description. In order to fix the identity of the name, I have labelled and here designate the male as lectotype and the female as paralectotype of *Bengalia bekilyana* Séguy. The dates are very difficult to decipher from the handwriting on the labels. Séguy gives the capture dates as "...février-avril 1932 ...", but as I read the labels the dates are March and January (see below). Zumpt (1962a: 65) claims to have seen "the type series consisting of 15 specimens" of *Bengalia bekilyana* Séguy. I received only two specimens from MNHN when asking for loan of the types. The number 15 may be based on some misunderstanding.



FIGURES 35–42. *Bengalia peuhi* Villeneuve, female (35, 40–42 from Madagascar, Marotziraka; 36–39 from Madagascar, Sept Lacs, both in MNHN). **35.** ST1–5. Some strong setae lost on ST2–5, note sockets. **36.** Spermathecae. **37.** Ovipositor, (almost) dorsal view. **38.** Ovipositor, (almost) left lateral view. **39.** Ovipositor, ventral view. **40.** Ovipositor, segments 7, 8 and hypoproct, opened along right side, partly flat view. **41.** Ovipositor, hypoproct, ST8 and left T8, internal view. **42.** Ovipositor, hypoproct, ST8 and left T8, internal view (different lighting). Abbreviations: v.s. = vaginal sclerite.

Lectotype male, by present designation, in MNHN, labelled (1) TYPE [black print on red label], (2) Madagascar [printed] / Bekily [handwritten] / III 30 [?, handwriting almost illegible] / A. Seyrig [printed]; (3) Bengalia ♂ / bekilyana / type / E. SEGUY det. 1935 [mostly handwritten by Séguy, but last line is printed except 35]. Dissected by KR. Dried T1–5 glued to on card above labels, genitalia in glycerol in glass microvial below labels. The abdomen is yellow with distinct but narrow black margins and shiny black epandrium. T5 with a pair of strong discal setae widely apart. The ST5 flap is typical of *peuhi* Villeneuve. **Paralectotype**. MNHN: 1 female labelled (1) COTYPE [red print on yellowish label]; (2) Bengalia ♀ / bekilyana / cotype / E. SEGUY det. 1935 [mostly handwritten by Séguy, but last line is printed except 35]; (3) Madagascar [printed] / Bekily [handwritten] / I. 32. [handwritten] / A. Seyrig [printed]. The female is a pale specimen in good condition, all legs intact.

Other material. BMNH: 1 male labelled (1) MARIMBA / In dambo [a type of African wetland] 3 / miles from lake / Dr. J.B.Davey / 16.1.10 / J.B.D [indistinct handwriting in pencil, line 4 with ink]; (2) Bengalia / depressa Walk / Villeneuve det. [handwritten in ink, but not by Villeneuve]; (3) Pres.by / Comm.Inst.Ent. / B.M.1953-343 [printed]; (4) AFRICANA [handwritten in blue with ball-point pen on white label]; (5) Bengalia (m) / *peuhi* Villeneuve, 1914 / K. Rognes det. 2012 [printed on white label]. The specimen was placed in BMNH under *B. depressa*. The specimen has the abdominal tip and ST5 flap removed from below and carried a large plastic vial with dissected parts in glycerol. There were three items in the vial: ST5 flap and parts of ST5; epandrium, cerci and parts of surstyli and bacilliform sclerites; hypandrium with pre- and postgonites and a broken aedeagus. These were transferred by KR to a glass microvial now pinned below label (4). I have added my determination label as *B. peuhi*. Left fore and mid leg present, other legs lost. The specimen lacks any discal setae on T5. Lehrer appears to have dissected it to judge from the type of removal of genitalia from the abdominal tip and the big plastic vial, but he did not identify or label the specimen. The dissection was unsuccessful, for the distal part of the distiphallus is absent (destroyed). The shape of the intact ST5 flap, the pale only anepimeral ground vestiture, the very short and stubby *pv* setae all along the mid femur and the spine-like setae on fore tibia clearly identify the specimen as *B. peuhi*. The label reading “AFRICANA” must have been put there by someone (Lehrer?) having observed the lack of discal setae on the T5, and thinking the specimen might be the male of the nominal species *B. africana*. However, the anepimeron is clothed only with pale setulae, opposite the condition in *B. africana* where all these setulae are black. The alleged determination by Villeneuve as *B. depressa* seems mysterious. I do not accept this specimen as one of the syntypes of *B. unicalcarata*, since Villeneuve hardly would have thought of this specimen as belonging to that taxon. J. B. Davey was a medical officer in British Central Africa (later Nyasaland, now = Malawi) and was a participant of the Royal Society’s Sleeping Sickness Commission during 1910–11. Most of his time was spent collecting tsetse flies on the shores of Lake Nyasa. His diary has entries for 15 and 18 January 1910, i.e., the day before and two days after he captured the aberrant *B. peuhi* (Vaughan 1991: 36–37). The locality Marimba is in present day Malawi, but I cannot find it on any map or in Google Earth. However, a Google search for “Marimba Malawi”, results in hits concerning a Kota-Kota Meteorite, Malawi. The locality is now spelt Nkhotakota and is in Central Malawi. **BMSA: South Africa** [5 males 2 females]: 1 male labelled (1) SIBASA / SE 22 30 Cd / 7. VII. 1980 / J. E. CRAFFORD / DEPT. ENTOMOLOGY / UNIVERSITY OF PRETORIA (handwritten on white label, except last two lines which are printed); (2) Ex. Dept. Entomology / University of Pretoria Coll. / Donated 2009 [printed on yellow label]; (3) Entomology Dept. / National Museum / P.O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 18168 [printed on white label, printed side downwards]. T5 with four evenly spaced discal setae in a row, erect ground setulae laterally and ventrally on T5. • 1 male labelled (1) SUIDAFRIKA / Noordelike P. / Tzaneen / 23°50'S 30°10'E / 13.III.1999 / C.E.VENTER [printed on white label]; (2) Ex. Dept. Entomology / University of Pretoria Coll. / Donated 2009 [printed on yellow label]; (3) Entomology Dept. / National Museum / P.O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 18176 [printed on white label, printed side downwards]. T5 with 2 discal setae only. • 1 male labelled (1) C. J. COLINJ / ACORNHOEK / APRIL 1971; (2) Ex. Dept. Entomology / University of Pretoria Coll. / Donated 2009 [printed on yellow label]; (3) Entomology Dept. / National Museum / P.O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 18159 [printed on white label, printed side downwards]. T5 with 3 strong discals. • 1 male labelled (1) W K R [handwritten] / Marno [? handwritten; difficult to interpret] Tvl. [= Transvaal; printed] / 27.xii.1929 [handwritten, except the number 19]; (2) Ex. Dept. Entomology / University of Pretoria Coll. / Donated 2009 [printed on yellow label]; (3) Entomology Dept. / National Museum / P.O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 18167 [printed on white label, printed side

downwards]. T5 with 2 discals only. • 1 male labelled (1) SOUTH AFRICA [printed]: T.v.L. / S E 26°20' 28°46' / Dornd'ooi / 25 - IV – 1988 / M.v. Niekerk / Department of Entomology [printed] / University of Pretoria [printed] [white label with black rim]; (2) Ex. Dept. Entomology / University of Pretoria Coll. / Donated 2009 [printed on yellow label]; (3) Entomology Dept. / National Museum / P.O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 18170 [printed on white label, printed side downwards]. T5 with row of four discals (the rightmost one lost, only basal pore remains. • 1 female labelled (1) E. R. L. / Mei 1971 / Pretoria; (2) Ex. Dept. Entomology / University of Pretoria Coll. / Donated 2009 [printed on yellow label]; (3) Entomology Dept. / National Museum / P.O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 18178 [printed on white label, printed side downwards]. T5 with row of eight strong, several additional short discal setae. • 1 female labelled (1) E. R. L. / Mei 1971 / Pretoria; (2) Ex. Dept. Entomology / University of Pretoria Coll. / Donated 2009 [printed on yellow label]; (3) Entomology Dept. / National Museum / P.O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 18180 [printed on white label, printed side downwards]. T5 with 2 strong discals, plus at least 3 additional small ones on each side.

MNHN: Madagascar (12 males, 10 females): 6 males and 4 females labelled: (1) Madagascar Sud-Ouest / SEPT LACS 50m / Tuléar / VI–VII 57 Andria R. [photographic paper label]; (2) INSTITUT / SCIENTIFIC / MADAGASCAR [printed black on pale green label]. One male and one female have been dissected by KR and have the dried T1–5 glued to piece of card above labels, and the genitalia in glycerol in glass microvial pinned below labels. • 1 male and 1 female labelled: (1) Amplijeroa 170m / Ankarafantsika / –I–57 R.E. [printed label]; (2) INSTITUT / SCIENTIFIC / MADAGASCAR [printed black on pale green label]. • 1 male labelled (1) Madagascar Sud-Ouest / Tuléar-Sakaraha / Zombitsy 630m / Raharitzonina [printed label]; (2) INSTITUT / SCIENTIFIC / MADAGASCAR [printed black on pale green label]. • 4 males and 2 females labelled (1) Andobo 190m / forêt Antsingy / dct Antsalova / –II–57 P. Griv. [printed label]; (2) INSTITUT / SCIENTIFIC / MADAGASCAR [printed black on pale green label]. One of the males has been dissected by KR and has the dried T1–5 glued to piece of card above labels, and the genitalia in glycerol in glass microvial pinned below labels. • 3 females labelled (1) Madagascar Sud / Poste Adm. de Bsivory / Marotsiraka / XI–59 Randriamasy [handwritten in black ink]; (2) INSTITUT / SCIENTIFIC / MADAGASCAR [printed black on pale green label]. One female has been dissected by KR. The dried T1–5 glued to piece of card above labels, and the genitalia in glycerol in glass microvial pinned below labels. The ovipositor has been slit open between tergites and sternites on one side.

Senegal: 1 female labelled (1) Muséum Paris / SENEGAL / M'Bour / 10.XI.1980 / B. SIGWALT [blue label, first line printed, others handwritten]; (2) Piège de / Malaise / de jour [printed on white label]; (3) My determination label.

Sudan: 1 male labelled (1) KOGONI / SOUDAN / 24.X.55 / J.-G.POINTEL [printed, except date which is hand-written over lines 1 and 2]. (2) My determination label. The specimen has 6 strong discal setae in a transverse row on T5.

? locality: 1 female labelled (1) Bol – Juin 1980 / Dr. Gaillard [handwritten]; (2) *Bengalia depressa* Walk [handwritten]; (3) KR's determination label. No locality label, unless “Bol” means a locality.

NMNW: Namibia [23 males and 33 females (correctly identified as *B. peuhi*); 1 female from Kaross (misidentified as *B. gaillardi*); 6 males and 11 females from Ugaranm, Sonderwater, Upper Hungorob ravine, Upper Hungorob, Hungorob ravine, Regenstein (misidentified as *B. spinifemorata* by Kurahashi & Kirk-Spriggs 2006: 63)]. The details regarding these specimens are not repeated here; the reader is referred to Kurahashi & Kirk-Spriggs (2006).

OUMNH [4 males, 2 females, all from the Bigot collection under *Bengalia depressa* (Walker), re-identified by Villeneuve and now placed under a single blue handwritten drawer label reading “*Bengalia* / D^r Villeneuve det. [this line printed] / *Peuhi* BB. / sec. Typ.” in Villeneuve's hand] (only one of these specimens, the one dissected, has been given my determination label):

Senegal: 1 male labelled (1) TYPE [printed text in red on round white label]; (2) Senegal [black ink handwriting]; (3) *Ph. depressa* [black ink handwriting] / EX. COLL. BIG. [printed in black]; (4) Oxford University / Museum Natural / History (OUMNH) [printed in black]. • 1 male labelled (1) Senegal [black ink handwriting]; (2) *Ph. depressa* [black ink handwriting] / EX. COLL. BIG. [printed in black]; (3) Oxford University / Museum Natural / History (OUMNH) [printed in black]. • 1 male labelled (1) Senegal [black ink handwriting]; (2) *Ph. depressa* [black ink handwriting] / EX. COLL. BIG. [printed in black]; (3) Oxford University / Museum Natural / History (OUMNH) [printed in black]; (4) *Bengalia* (m) / *peuhi* Villeneuve, 1914 / K. Rognes det. 2011 [printed]. Dissected by KR. Area of upper lip between two strengthenings more sclerotised than the rest, appearing as a broad sclerotisation at middle. 5 exceedingly small tines distally on antlers. Very strongly sclerotised genitalia. No vestiture on underside of distal surstylus. • 1 female labelled (1) Senegal [black ink handwriting]; (2) *Ph. depressa* [black ink handwriting] / EX.

COLL. BIG. [printed in black]; (3) Oxford University / Museum Natural / History (OUMNH) [printed in black]. **Sudan:** 1 male labelled (1) Khartoum [black ink handwriting]; (2) Ph. depressa [black ink handwriting] / EX. COLL. BIG. [printed in black]; (3) Oxford University / Museum Natural / History (OUMNH) [printed in black]. ? **locality:** 1 female labelled (1) Ph. depressa [black ink handwriting] / EX. COLL. BIG. [printed in black]; (2) Oxford University / Museum Natural / History (OUMNH) [printed in black]. No locality label. **ZMUN: Ghana:** 2 females labelled: (1) GOLD COAST [Ghana] / N. TERRITORIES / KOFABA / FEB. 1916 / DR J J SIMPSON [printed]; (2) Department of Zoology / Natural History Museum / University of Oslo / (ZMUN) / World collection [printed]. One of the females carries a handwritten determination label reading (3) Bengalia / peuhi B.B. I have added my determination label to both specimens. Both females have a transverse row of 9 discal setae on T5 (4 on the left, 5 on the right side).

[*Bengalia unicolor* Séguy, 1946]

Bengalia unicolor Séguy, 1946: 85.

Bengalia unicolor: Rognes 2009: 52.

This species, which has been known only from a single male specimen from Pakistan, was treated in full by Rognes (2009). A second specimen, also a male, of this species (in CNC) has now turned up. It is labelled (1) Barmer, INDIA / Thar Desert. / VII 1955 / P.S. Nathan; (2) Bengalia / unicolor Seg. / Det. Shewell 1971. Barmer is in the Indian province of Rajasthan in the southern part of the Thar Desert which runs along the boundary between India and Pakistan.

The Indian specimen is fully matured (in contrast to the holotype in MNHN) and without dark marginal bands on the abdominal tergites. Length 13.5mm. The frons at vertex / head width ratio is 0.31. The T5 has 2 medial and 2 lateral discal setae on each side. The epandrium is dark yellow, i.e., concolourous with the abdominal tergites. The hind tibia has 1 *pd* seta on basal half on left side, but 2 *pd* on right side. Otherwise it fits the description given by Rognes (2009: 52), including the ST5 flap which is clearly visible. I have not dissected this specimen.

For a discussion of my oversights concerning this species, and its assignment, see above in the introduction to the *Bengalia peuhi* subgroup section.

Bengalia floccosa subgroup

This subgroup is defined by its members sharing a unique synapomorphy, i.e., the presence of a distal finger in the distiphallus. This is a peculiar bilateral process originating distally on the inside of the dorsolateral wings of the distiphallus and proceeding forwards on the inside of the base of the antlers. It has different length, curvature and direction in the various species of the subgroup. It was discussed in some detail by Rognes (2009: 14–15). The *B. floccosa* subgroup members share the following additional character states:

- (1) parafacial with dark spot in upper part;
- (2) frons yellow or brown, frontal vitta with numerous conspicuous setulae or almost bare;
- (3) no setulae on lunula;
- (4) anepimeron with yellow setulae only, black setulae only or black setulae above and yellow below; in one species with a bundle of strong setae in upper part;
- (6) small spinous setae ventrally in proximal half of fore tibia, or such setae absent
- (7) hind tibia without *pd* setae;
- (8) tibial fringes variably developed;
- (9) ST5 flap variable;
- (10) process of the bacilliform sclerite a strong but narrow upturned hook or a small triangular projection;
- (11) distal margin of upper lip convex or straight in dorsal view;
- (12) upper lip almost flat or concave below as seen from front;
- (13) no diverging lines of sclerotisation on upper lip, and no vertical supporting structures below it;
- (14) short bifurcate antlers, or long antlers with a serrated flange along front side;
- (15) conspicuous lateral finger, with numerous denticles;
- (16) ventral finger rounded in lateral view.

3. *Bengalia depressa* Walker, 1858

Figs. 43–74.

- Bengalia depressa* Walker, 1858: 211. Lectotype female (BMNH, examined), by present designation. Type locality: South Africa, Port Natal. For details, see below under Type material.
- Ochromyia limbata* Bigot, 1888: 609. Holotype male (as “♀”) (OUMNH, examined), by monotypy. Type locality: South Africa: Port Natal. For details, see below under Type material.
- Bengalia depressa*: Brauer & Bergenstamm 1891: 420 (as “*depressa* Wlk. Port Natal.” under “*Bengalia* R.D.”).
- Bengalia depressa*: Villeneuve 1913a: 153. Male described without mention of localities. A female Villeneuve thought belonged to the same species probably belongs to *B. tibiaria* Villeneuve, 1926. More on this under that species, below.
- Bengalia unicalcarata* Villeneuve, 1913c: 348. Lectotype male (MRAC, examined), by present designation. Type locality: Democratic Republic of Congo (Sankisia). All the labels are shown in Fig. 48. See below under Type material for details on the specimens on which Villeneuve based the name.
- Bengalia unicalcarata*: Villeneuve 1914: 254. Reported from “Nyasaland; Ouganda; Abyssinie; Congo Belge ... Somaliland”, based on material in “Imperial Bureau of Entomology” (cf. Villeneuve’s introduction to the paper on p. 253; now = BMNH).
- Bengalia (Ochromyia) africana* Malloch, 1927: 407. Holotype female (BMNH, examined), by original designation. Type locality: Kenya (“S. Masai Reserve”). **Syn. nov.**
Note. Described from a single female, designated as “Type”, in BMNH. The synonymy is discussed below, under Type material.
- Bengalia (Ochromyia) depressa*: Malloch 1927: 410. Reported from “Embu, B.E.A.” [= Embu, Kenya] and “Winklespruit” (in South Africa, KwaZulu-Natal province).
- Bengalia africana*: Zumpt 1956: 168. Zumpt repeats Malloch’s description *in extenso*, and adds a few comments. Unknown to Zumpt.
- Bengalia depressa*: Zumpt 1956: 174. Reported from Democratic Republic of Congo, South Africa, Swaziland and Zimbabwe (as “South Rhodesia”).
- Bengalia depressa*: Rickenbach 1967: 47. Central African Republic.
- Bengalia africana*: Pont 1980: 791. Catalogue entry.
- Bengalia depressa*: Pont 1980: 791. Catalogue entry.
- Bengalia africana*: Lehrer 2005: 18. Listed among species “designées, sans base scientifique, comme espèces valides. C’est le cas de *Musca varicolor* Fabricius (sexe inconnu), *Calliphora floccosa* Wulp 1884 (♀), *Bengalia africana* Malloch (♀), *Bengalia aliena* Malloch (♀) etc.”.
- Afridigalia walkeriana* Lehrer, 2005: 75. Holotype male (BMNH, not examined), by original designation. Type locality: South Africa, “Natal, Malvern”. Additional records (paratypes) from Democratic Republic of Congo, Kenya, Malawi and Tanzania.
Note. I have discussed Lehrer’s unnecessary introduction of this name in my review of his book “Bengaliidae du Monde. Insecta Diptera” (Rognes 2006). See also discussion in the last two paragraphs of the section on Type material, entry for *B. unicalcarata*, below.
- Bengalia depressa*: Kurahashi & Kirk-Spriggs 2006: 109. Zimbabwe. Examined.

Diagnosis. *Male*. Length: 10–13mm (n=4). Frons at vertex / head width ratio: 0.28–0.29 (mean 0.29, n=3). A species easily recognisable in the male sex by the shape of the ST5 flap.

Anepimeron with mostly black setulae, though usually with some yellow setulae ventrally and posteroventrally. Fore tibia with one or two weak spine-like setae on ventral surface of proximal fourth, strongest about three quarters of tibial width. Fringe on lower half of hind tibiae weak, consisting of about 10 widely set long thin setae on *av* surface, hardly affecting *v* surface, not reaching *pv* surface.

ST5 flap with a broad evenly rounded concavity affecting most of the hind edge; each posterolateral corner rounded at tip, the base of the ST5 flap much narrower than the width distally.

Cercal prongs slightly irregular in dorsal view. Inner edge of surstylus very slightly curved. Process of bacilliform sclerite small and pointed.

In distiphallus distal finger a short, stout and straight peg pointing horizontally, in lateral view, and mediodistally, in dorsal view, from its origin; hidden in lateral view by the vertical sclerotisation passing between the lateral edge of the upper lip and the anterior edge of the antler. Upper lip almost flat when viewed from front, only a slight shallow concavity below; in dorsal view, shaped like the rim of a human upper lip seen from front (rotate Fig. 54 90° counter-clockwise to see the Cupid’s bow), with two broad shallow concavities laterally and a very slight concavity in middle (may be absent).

Female: Length: 10–11mm (n=4). Frons at vertex / head width ratio: 0.28–0.33 (mean 0.31, n=4). Frontal vitta with numerous setulae. ST2 without pair of long and strong black median marginal setae, but weak black setae

present along posterior third of lateral margin. ST3 and ST4 with strong median marginals and with shorter black setae along the sides. Extensive membrane between the lateral margins of the ventral parts of the tergites and the lateral margins of the sternites. T5 with short rather strong and erect setae on lateral and ventral side, and an area of weak sclerotisation behind the marginal setae with a semicircular anterior delimitation (Figs. 68, 70). T6 sclerotisations reduced to area around spiracles 6 and 7, although narrow bands extend medially to support the marginal setae; row of marginal setae interrupted middorsally. T7 a pair of narrow rods; row of marginal setae interrupted at middle, 10–15 small discal setulae middorsally. T8 sclerites a little broader than T7 sclerites. ST6 narrow proximally, forming a kind of pronounced “handle”; broad distally, with numerous setae. ST7 a broad shield-like sclerite covering the ventral half of the ovipositor circumference; proximally with a narrow, oval unsclerotised zone reaching backward to middle. ST8 with diverging parts proximally, distally a single upturned vertical part with numerous setae. Tip of ovipositor with “soft” setae only. Spermathecae elongate oval. [One female dissected.]



FIGURES 43–48. *Bengalia depressa* Walker, male (43 from South Africa, Scottburg, NMSA-DIP / 57935, in NMSA; 45, 47, 48 from lectotype of *B. unicalcarata* in MRAC; 44, 46 from *B. depressa* ex coll. Bigot in OUMNH). **43.** Left anepimeron. **44.** Left fore tibia, inside (anterior) view. **45.** Left fore tibia, anterior view. **46.** Left hind tibia, anterodorsal view. **47.** Left hind tibia, anterodorsal view. **48.** Labels (9).

Villeneuve (1913a: 153, lines 9–13) appears to have seen a female with a sting-like ovipositor tip like in *B. gaillardi*, but with oval and “unarmed” abdominal sternites. He seems to have regarded it (erroneously) as the female of *B. depressa*. In later papers he never mentions the ovipositor tip feature again. Females with this combination of features are *B. tibiaria*. More on this under that species, below.

Discussion. Lehrer treated *Bengalia depressa*, “la connue espèce fictive” (Lehrer 2005: 17–18) as an unrecognisable name, being based on female(s), which he considered unidentifiable. For this reason he redescribed the species on the basis of males under his own name *Afridigalia walkeriana*, even though the

majority of the paratypes of his *A. walkeriana* had been examined and identified by various experts as *B. depressa* or one of its synonyms listed above. In the process he overlooked the existence of available names based on males (*limbata* Bigot, *unicalcarata* Villeneuve), see above for details. He also overlooked Villeneuve's (1914) description of the absence of strong marginal setae on the ST2 of the female of *B. depressa* (as *B. unicalcarata*) which was also recognised as a distinguishing character by Zumpt (1956). All the females I have seen of *B. depressa* show this feature. Thus it can hardly be said that the identity of *B. depressa* "cannot be determined from its existing name bearing type" (Article 75.5 of ICZN 1999). Therefore I think it unnecessary to set aside the existing name-bearing type and to designate a male neotype for *Bengalia depressa* in order to fix the interpretation of the name as currently understood. *Bengalia depressa* has been understood in its current sense for about a hundred years, and there has never been any doubt about its identity. If this is unsatisfactory, then an alternative approach would be to ask the Commission to have the male holotype of *Afridigalia walkeriana* Lehrer from South Africa (Natal, Malvern) designated as neotype of *Bengalia depressa* Walker. Lehrer has provided unmistakable drawings of the male genitalia of this species. The paratype of *A. walkeriana* from Port Natal, the type locality of *B. depressa*, is also a good candidate. Both specimens are in BMNH.

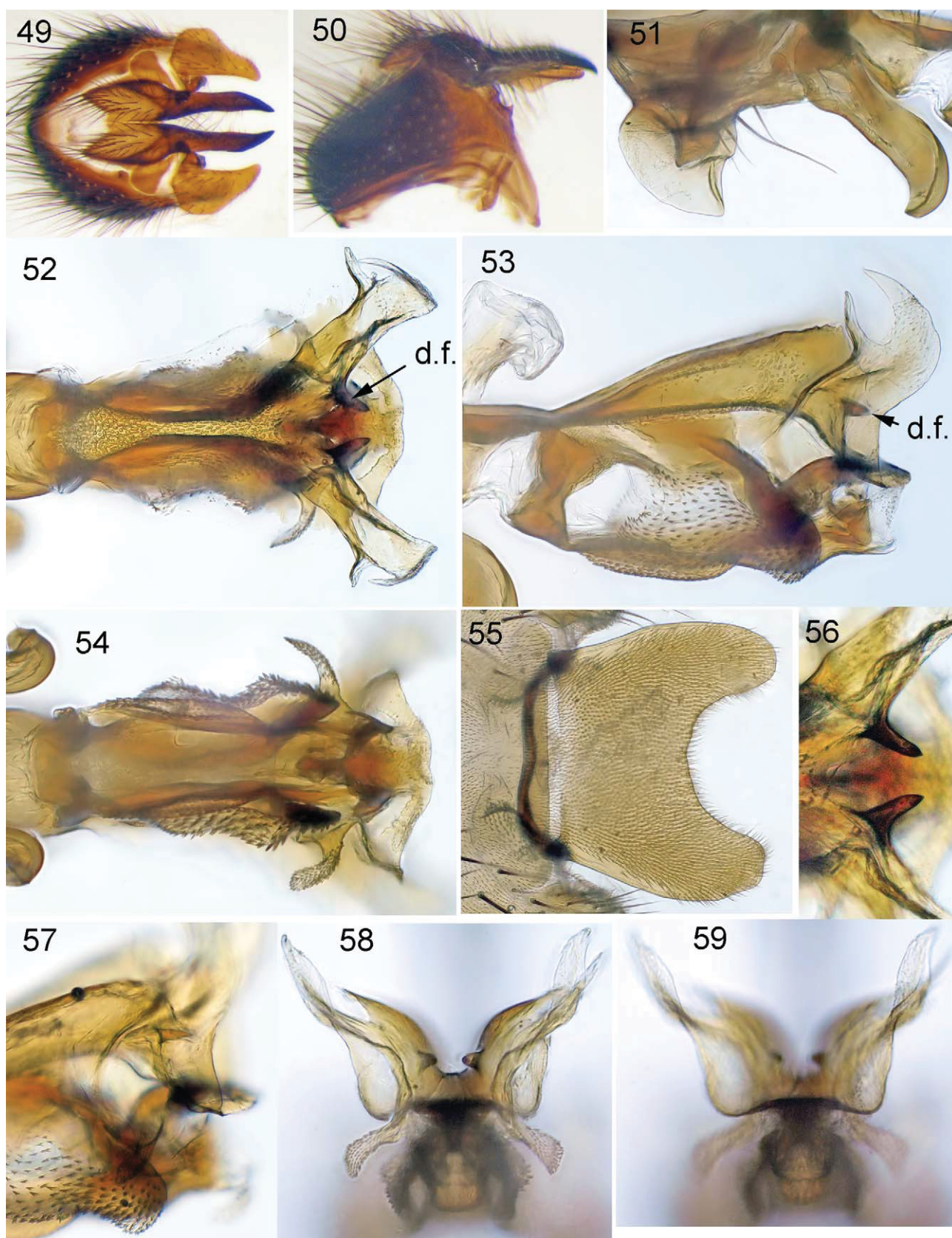
In *B. africana* the anepimeron is clothed with black setulae only, and none of these are strong and seta-like, as in *B. aliena*. The T4 marginals are short and rather widely separated (Figs. 68–70, magenta arrows). A weakly sclerotised membrane ("notch") is present in the hind margin of T5 (Figs. 68, 70, 74). T5 is without medial discals, only decumbent ground setulae are present dorsally; on the lateral and ventral side of T5 all ground setulae are short and erect (Figs. 68, 70). ST2 lacks median marginal setae. ST3–4 are of the oval elongate type, with a pair of strong median marginals distally (Fig. 74). The ovipositor tip is of the usual type without "stiff" setae (Figs. 70, 74). Because the specimen is staged and unlikely to survive an attempt at breaking loose the abdomen, I have not dissected the female ovipositor.

I assume that the lack of discal setae on T5 in the female holotype of *B. africana* is a very rare individual aberration, since no male specimens have been found with black setulae on the anepimeron in combination with lack of T5 discal setae in the 85 years that *B. africana* has been known. I also think it most likely that it is the female of a very common species. A similar very rare lack of discals on the T5 is displayed by a male specimen of *B. peuhi* from Malawi (Marimba, Davey leg., in BMNH) (see above). This specimen is undoubtedly *B. peuhi* on account of the shape of the ST5 flap, the presence of only pale setulae on the anepimeron, the row of strong short stubby *pv* setae on the whole length of the mid femur, a bundle of strong *v* spine-like setae on the fore tibia and a bacilliform sclerite process exactly as in normal specimens. *B. africanoides*, *B. bantuphalla*, *B. depressa* and *B. roubaudi* have an anepimeron with a majority of black setulae. The rather widely spaced T4 median marginals of *B. africana* rule out *B. bantuphalla* as its male counterpart. Both *B. depressa* and *B. floccosa* have a weakly sclerotised membranous area or notch in the hind margin of T5 behind the marginal setae, resembling the corresponding area in the holotype of *B. africana*. The short erect ground vestiture on the lateral and ventral side of T5 is a feature also shared with both *B. depressa* and *B. floccosa* females, but *B. floccosa* has too few black setulae on the anepimeron, and strong median marginals on ST2, so this species can be left out of consideration. I think the almost exact correspondence between the T5 ground vestiture in *B. africana* and *B. depressa* and the similar distribution of black anepimeral setulae makes the conclusion that *B. africana* is a junior synonym of *B. depressa* almost inescapable. I have therefore placed *B. africana* in synonymy with *B. depressa*.

Biology. Capture dates for material I have examined are from all months of the year except April and June. Lehrer (2005) reports material captured also from April, June and July. No details about life cycle are known.

Distribution. *Central African Republic, *Cameroon, *Democratic Republic of Congo, *Ethiopia, *Kenya, *Malawi, *Mozambique, Somalia, *South Africa, Swaziland, Tanzania, Uganda and *Zimbabwe.

Material examined. Type material. *Bengalia depressa* Walker, 1858: 211. **Lectotype** female, in BMNH, labelled (1) Holo- / type [printed on circular label with red rim]; (2) P. Nat. [handwritten]; (3) depressa Wlk [handwritten on bluish label]; (4) Port Natal / S. Africa. / Ex coll. / Saunders / 68.4. [handwritten]; (5) HOLOTYPE ♀ / Bengalia / depressa Walker / 1858, Trans.ent. / Soc.Lond. (2)4:211 [handwritten by A.C.Pont on rectangular white label with a red rim] (6) LECTOTYPE (f) / *Bengalia depressa* / Walker, 1858: 211 / K. Rognes des. 2012 [printed on red label].



FIGURES 49–59. *Bengalia depressa* Walker, male (all from *B. depressa* ex coll. Bigot in OUMNH). **49.** Cerci and surstyli, posterior view. **50.** Cerci and surstyli, lateral view. **51.** Pre- and postgonites, left. **52.** Distiphallus, dorsal view. **53.** Distiphallus, left lateral view. **54.** Distiphallus, ventral view. **55.** ST5 flap. **56.** Details of distiphallus, dorsal view, showing distal fingers. **57.** Details of distiphallus, lateral view. **58.** Distiphallus, apical view, focus at level of base of distal fingers. **59.** Distiphallus, apical view, focus near distal edge of upper lip. Abbreviations: *d.f.* = distal finger.

Walker described *B. depressa* on the basis of an unstated number of females from “Port Natal” in South Africa. In BMNH there is only a single female that originates from Saunders’ collection and which is now labelled as a holotype. Crosskey (1974) discussed the problem of the status of a single extant type from a type series of unknown size. Walker gives ranges both for the length of the body (“4 ½–5 lines”) and for the wings (“8–9 lines”) for his *B. depressa*. A similar range notation, as opposed to single measurement numbers, is given only for one other nominal species in Walker’s (1858) paper, i.e., for *Ropalomera tibialis* listed on pp. 222–223, where he explicitly based the description on both male and female specimens. Crosskey (1974: 272, 278), discussing a similar case involving *Tachina comosa* Walker, 1853, used this kind of information as evidence “that there was more than one original specimen” and designated the only known specimen of *Tachina comosa* as lectotype, as opposed to considering it to be the holotype. I agree with this reasoning and have therefore labelled and here designate the “holotype” of *B. depressa* Walker in BMNH as lectotype (see also Recommendation 73F of ICZN 1999).

Villeneuve was informed by Austen (Villeneuve 1913c: 348), who had examined “le type de *Bengalia depressa* Walk. conservé à Londres”, that it was the same as “la curieuse ♀ africaine qui présente la herse d’aiguillons ventraux”, i.e., *B. gaillardi* Surcouf & Guyon, 1912. The latter species is easily recognisable in the female sex because of the very strong spine-like setae on the margin of ST2, and sides and hind margins of the ST3–5, and also because of the presence of a projecting and spinous ovipositor tip, both carefully described by Villeneuve (1913a: 153) (cf. Figs. 111, 113–117).

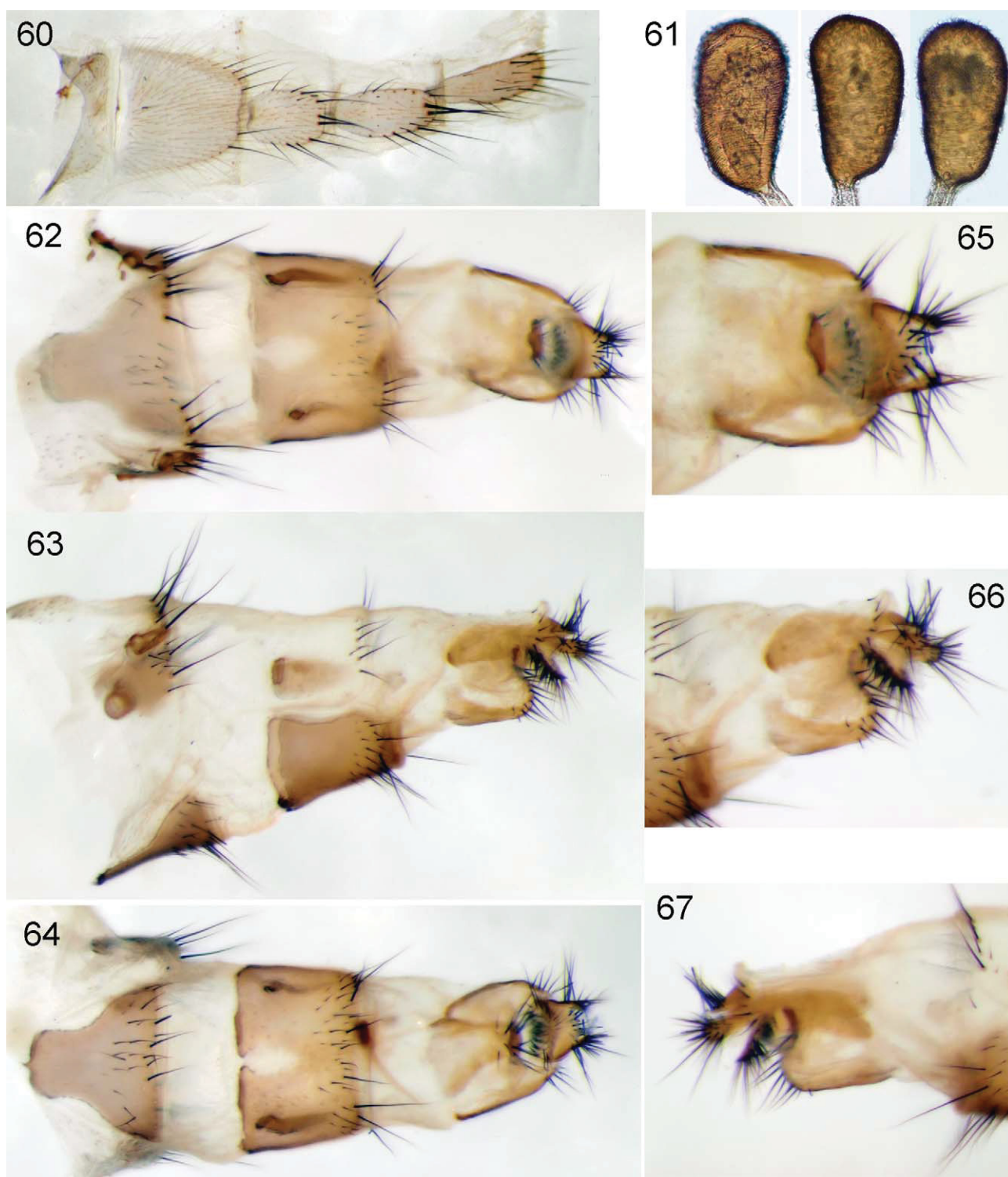
However, Austen was in error. According to Villeneuve (1914: 255, in a foot-note), Surcouf himself had subsequently examined the female type of *B. depressa* Walker in London and made it clear that it did not belong to *B. gaillardi*, since it in fact lacked the typical spines of the abdominal sternites of that taxon, but belonged to one of the two nominal species *B. unicalcarata* or *B. floccosa*. Note in passing that Villeneuve (1914: 253) identified *B. gaillardi* with the nominal species he cited as “*Bengalia spurca* Br. et Berg. type”. Note also that Villeneuve in this manner introduced the name *spurca* as a valid name, since *spurca* Brauer & Bergenstamm, 1891: 420 is a *nomen nudum*, cf. below under *B. gaillardi*.

I can confirm the observation that the female lectotype of *Bengalia depressa* Walker indeed lacks the strong spine-like setae on the margin of ST2 and the sides and hind margins of ST3–5. These sternites are like the ones figured in Fig. 60. Note also that they lack a pair of strong marginal setae on ST2, but have stronger apical setae than those neighbouring them on the ST3–4, exactly as described for *B. unicalcarata* by Villeneuve (1914: 254–255).

Ochromyia limbata Bigot, 1888: 609. **Holotype** male [as “♀”], in OUMNH, by monotypy. The holotype is standing under a drawer label reading “O. Limbata. ♀. / Port-Natal. J. Bigot.” [Bigot’s handwriting on a white label with three thin black lines and a black frame.] The specimen is pinned through the thorax by a heavily corroded thick pin, secured with glue, staged on a piece of expanded polyethylene and labelled (1) Holo- / type [printed on white circular label with red rim]; (2) O. limbata / EX COLL. BIGOT [first line handwritten, second line printed on white label]; (3) Oxford University / Museum of Natural / History (OUMNH). Beside the specimen is a label by Dear reading “Holotype ♂ / limbata Big. [handwritten] / det. / J.P.Dear 1977”. According to Verrall’s list of the contents of the Bigot collection, the holotype, marked as a female, was lent out to Brauer in 1898.

Bigot described *O. limbata* from a single specimen (“1 spécimen”) from “Port Natal” believed by him to be a female. The holotype listed above is obviously the specimen before Bigot when he described *O. limbata*. Bigot did not use the word type, or an equivalent term, so it is a holotype by monotypy. The specimen is a male with a pair of discal setae on the T5 and clearly belongs to the taxon understood now as *Bengalia depressa*, as witnessed by the shape of the ST5 flap, the sparse fringe on the hind tibia, one short and one even shorter spine-like seta ventrally on the fore tibia, and the large majority of the anepimeral setulae being black. Bigot is not the first to mis-sex *Bengalia* males as females (cf. Rognes 2009). The holotype is in good condition, and all legs are intact.

Bengalia unicalcarata Villeneuve, 1913c: 348. **Lectotype** male, in MRAC, labelled: (1) Sankisia / about / 22 – IX – 1911 [handwritten]; (2) COLL. MUS. CONGO / Sankisia 22 · IX · 1911 / (J. Bequaert) [handwritten except first line which is printed]; (3) limbata / sec.typ. Bigot / = depressa BB / sec. typ [Villeneuve’s handwriting]; (4) *Bengalia* / *unicalcarata* / Typ. Villen. [Villeneuve’s handwriting]; (5) TYPUS / B. unical- / carata Vill. [first line printed, other lines handwritten on dark orange label with black rim]; R. DET. / 5575 / C. [printed except letter in third line which is handwritten]; (7) *Bengalia* ♂ / *depressa* Walk. / det. Zumpt 60 [handwritten by Zumpt]; (8) *Afridigalia* ♂ / *walkeriana* Lehrer n.sp. / Det. Dr. A.Z. LEHRER / 2004 [printed]; (9) LECTOTYPE (m) / *Bengalia unicalcarata* / Villeneuve, 1913: 348 / K. Rognes des. 2012 [printed on red label] (Fig. 48). The genitalia have been removed from the tip of the abdomen (by Zumpt?). The ST5 flap and epandrium with cerci and surstyli are glued to a card above the labels.



FIGURES 60–67. *Bengalia depressa* Walker, female (all from South Africa, Pinetown, NMSA-DIP 57931 in NMSA). **60.** ST1–5. **61.** Spermathecae. **62.** Ovipositor, dorsal view. **63.** Ovipositor, left lateral view. **64.** Ovipositor, ventral view. **65.** Tip of ovipositor, dorsal view. **66.** Tip of ovipositor, left lateral view. **67.** Tip of ovipositor, right lateral view.

The left fore tibia has a single short spine-like seta on the ventral third (Fig. 45). The right fore leg is missing.

Paralectotypes. BMNH (5 males, 1 female, all provided with my red paralectotype label, labelled as follows): 1 male labelled (1) Mlanje [handwritten] / Nyasaland [printed] / 16.I.1913 [printed except last digit] / S.A.Neave [printed]; (2) = limbata / (sec.typ.) Bigot / = depressa (Walk.) B.B. [handwritten by Villeneuve on blue label]; (3) Bengalia / Dr. Villeneuve det. / unicalcarata / Villen. [handwritten by Villeneuve on blue label, except line 2 which is printed]; (4) Det. Dr. Villeneuve. / Pres. by / Impl.Bur.Ent. / 1919—108 [printed] • 1 female labelled (1) Bengalia

/ unicalcarata. Villen. / DET. BY / DR. J. VILLENEUVE [first two lines in fine handwriting by ?; last two lines printed]; (2) Mlanje [handwritten] / Nyasaland [printed] / 13.I.1913 [printed except last digit] / S.A.Neave [printed]; (3) Det. Dr. Villeneuve. / Pres. by / Impl.Bur.Ent. / 1919—108 [printed]. Abdomen lost • 1 male labelled (1) Mt. Mlanje, / Nyasaland, / 19.XI.1912 / S.A.Neave [all printed except for third line, where the day, month and last digit are handwritten]; (2) Pres. by / Com.Inst.Ent / B.M.1950—323 [printed]. • 1 male labelled (1) Mlanje [handwritten] / Nyasaland [printed] / 14.II.1913 [printed except last digit] / S.A.Neave [printed]; (2) Pres. by / Com.Inst.Ent / B.M.1950—323 [printed]. • 1 male labelled (1) Mt. Mlanje, / Nyasaland, / 26.XI.1912 / S.A.Neave [all printed except for third line, where the day, month and last digit are handwritten]; (2) Pres. by / Com.Inst.Ent / B.M.1950—323 [printed]; (3) Bengalia / depressa / Walk. [folded label handwritten by Villeneuve]. • 1 male [staged] labelled (1) Mt. Mlanje, / Nyasaland, / 23.XI.1912 / S.A.Neave [all printed except for third line, where the day, month and last digit are handwritten]; (2) Pres. by / Com.Inst.Ent / B.M.1950—323 [printed].

Villeneuve (1913c: 348) gave this name to male and female specimens he had earlier (Villeneuve 1913a: 153) identified as “*Bengalia depressa* Walk.”. He described a female, which he found close to *B. gaillardi* in appearance and colour, but which lacked the strong armature of the abdominal sternites of the females of the latter species. In a footnote on the same page he described a male he believed to be of the same species as having only a single isolated spinous seta ventrally on the upper third of the fore tibia, and long, sparse and irregularly arranged setae on the hind tibia (“[l]e ♂ de cette ♀ n’a qu’une épine tout à fait isolée au 1/3 supérieure des tibias antérieure; ... ses tibias postérieures ont, ..., de long poils sétiformes peu serrés et rangées irrégulièrement.”). However, after correspondence with “M. Austen du British Museum” he was informed [erroneously] that the female type of *Bengalia depressa* Walker, 1858 in BMNH was the same as *Bengalia gaillardi* Surcouf & Guyon, 1912 (the species with strong armature on abdominal sternites in the female), the latter thus falling into synonymy with the former (Villeneuve, 1913c: 348). For this reason Villeneuve (1913c: 348) thought his specimens represented a new species, which he named *Bengalia unicalcarata*, the specific name referring to the presence of a single spine-like seta on the ventral side of the fore tibia.

Malloch (1927: 410) was later informed by F. W. Edwards at BMNH that in his opinion “*unicalcarata*, Villeneuve, is identical with *depressa*, Walker, ...” and Malloch accepted that synonymy. Austen had made a mistake. More on this subject above, under *Bengalia depressa* Walker.

Villeneuve (1913c) did not indicate how many specimens he had before him. Villeneuve (1913a) reported to have examined both sexes, thus at least two specimens. In the original publication Villeneuve (1913c) declared “Je l’ai reçue aussi du Cap [South Africa]”, but, again, the number of specimens from that locality was not stated. Further, the use of the word “aussi” here, and the fact that the specimens on which he based his *unicalcarata* were at first identified and published as *depressa*, make it very likely that he did not list all the material he had before him in the publication where he created the name *unicalcarata* (Villeneuve 1913c). Therefore I think I am justified in looking elsewhere to decide which specimens constituted the type series.

Villeneuve (1914: 254) listed material he identified as *Bengalia unicalcarata* from “Nyasaland; Ouganda; Abyssinie; Congo belge”. The material he studied for this paper was sent to him from “l’Imperial Bureau of Entomology du British Museum” (now BMNH). In the BMNH collection under *B. depressa* are 7 males and 3 females from “Nyasaland” [Malawi], 6 males and 3 females having been collected on various dates in 1912 and 1913 by S.A. Neave on Mt. Mlanje in “Nyasaland”, a single male (the seventh) having been collected by J.B. Davey at Marimba, Undarabo, in 1910, also in Malawi. The latter specimen belongs to *B. peuhi* Villeneuve (see above under that species, under Other material, BMNH). With some hesitation I have decided not to accept this as a syntype of *B. unicalcarata*. Since Villeneuve’s 1913c paper was communicated at a meeting of the Société entomologique de France on 23 July 1913. I consider all the S.A. Neave material captured before 14.II.1913 (5 males and 1 female) as syntypes of *Bengalia unicalcarata* Villeneuve, 1913 and have labelled them and here designate them as paralectotypes (listed as such above). The remaining specimens in BMNH (1 male and 2 females with capture dates on 22.VIII.1913 or later) are not syntypes. They have been listed under Other material, below.

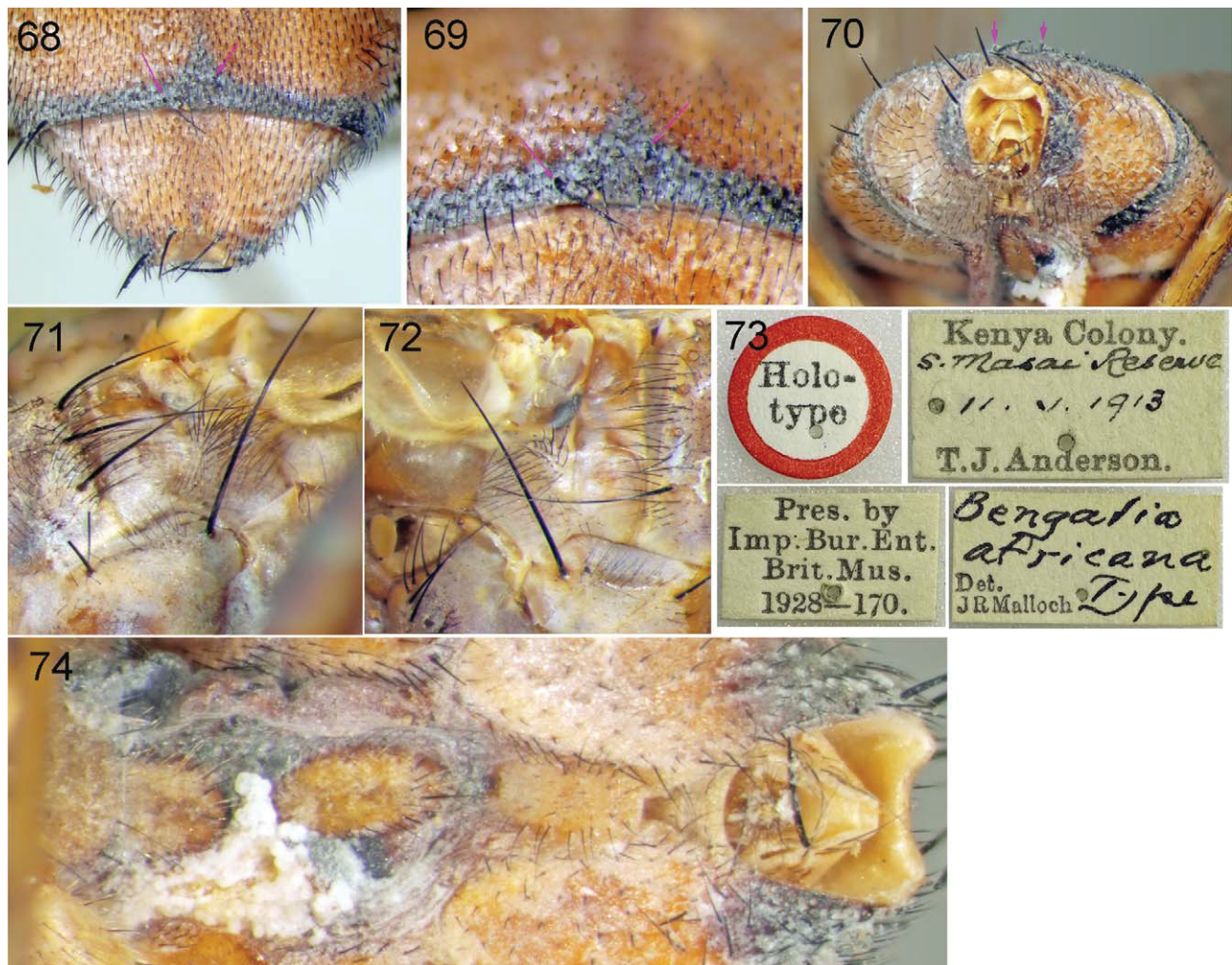
There is also a male syntype in MRAC, and I have selected this male from the Democratic Republic of Congo in MRAC as lectotype to fix the interpretation of the name. I have labelled it accordingly (fig. 48). According to the labels, it was at first identified by Villeneuve as *B. depressa*, or, to be more exact, as “limbata sec. typ Bigot / = depressa BB. sec.typ” (cf. label 3), then as *B. unicalcarata* (cf. label 4). It has a single strong seta on the fore tibia, thus satisfying the descriptions in Villeneuve (1913a, 1913c) and it was captured in “Congo belge”. All of this is consistent with the assumption that the specimen is a syntype. The only problem is that the locality “Congo belge” is listed in Villeneuve’s paper from 1914, which, according to the introduction to the paper (p. 253), was based on

material sent to him from the “Imperial Bureau of Entomology” (later incorporated into BMNH). So the depository of the lectotype would have been expected to be BMNH, not MRAC. However, he may of course have included other than BMNH material in this paper, for practical reasons.

Zumpt (in letter to Basilewsky at MRAC, dated 3 January 1961) stated that he had “just studied the ... types of *Bengalia* described by Villeneuve. *B. unicalcarata* is identical with *B. depressa*, ...”. Zumpt appears to have studied precisely the specimen I have designated as lectotype. It carries Zumpt’s identification label from 1960, a date consistent with the date of his letter to Basilewsky.

Lehrer (2005) listed this syntype (now designated as lectotype) among material he had assigned to his species “*Afridigalia walkeriana*”, but did not discuss the status of the specimen as a syntype of Villeneuve’s *B. unicalcarata*. From Lehrer’s viewpoint *B. unicalcarata* would have been suitable as a name for this species, (1) since it is based on a male, and (2) since he treated *B. depressa*, “la connue espèce fictive” (Lehrer 2005: 17–18), as an unrecognisable name, being based on female(s), and (3) since he did not know about the holotype (male, not female) of *B. limbata* in OUMNH. It is unfortunate that he nevertheless found it opportune to create his own name, doomed from its inception.

According to Lehrer’s list there is another specimen from Democratic Republic of Congo in MRAC, i.e., a male from Kibimbi, leg. Bequaert, which also has been identified by Villeneuve. It was identified as “*Bengalia limbata* Bigot sec. Typ., Dr. Villeneuve det.” and it does not carry any labels indicating that it is a syntype of *unicalcarata*; i.e., there is no determination label indicating that it earlier had been identified as *depressa*, and no determination label as *unicalcarata* (according to Lehrer’s citation of the label texts). This specimen is consequently not a syntype of *B. unicalcarata*.



FIGURES 68–74. *Bengalia depressa* Walker, female (from holotype of *Bengalia africana* Malloch, in BMNH). **68.** T4 and T5, dorsal view. Magenta arrows point to marginal setae on T4. **69.** Junction of T4 and T5, enlarged dorsal view. Magenta arrows point to marginal setae on T4. **70.** Tip of abdomen, posterior view. Magenta arrows point to marginal setae on T4. **71.** Left anepimeron. **72.** Right anepimeron. **73.** Labels (4). **74.** ST2–5 and surrounding area.

Bengalia africana Malloch, 1927. **Holotype** female in BMNH labelled (1) Holo- / type [printed on circular label with red rim]; (2) Kenya Colony. / S. Masai Reserve / 11.v.1913 / T.J. Anderson. [printed, except lines 2 and 3 which are handwritten]; (3) Pres. by / Imp.Bur.Ent. / Brit.Mus. / 1928—170. [printed]; (4) *Bengalia / africana* / Type / Det. JRMalloch [handwritten, except two last lines which are printed]. The specimen lacks the fore leg, the mid leg and the tibia and tarsus of the hind leg on the right side. On the left side there are intact fore and mid legs, but the hind leg lacks the tarsus. The specimen is glued to and impaled dorsally on the left side of thorax on the triangular point of a narrow celluloid plate; the left side of the thorax being destroyed for this reason. There are 4 *post dc* on the right side. The first *post dc* is lost, but the basal socket is visible. The second *post dc* is present, but displaced from its basal socket, which is in its normal position. The third and fourth are present and of normal robust size. All the four are placed at regular short intervals.

Other material. BMNH: Malawi: 1 male labelled (1) Mt. Mlanje, / Nyasaland, / 29.IX.1913 / S.A.Neave [all printed except for third line, where the day and month are handwritten]; (2) Pres. by / Com.Inst.Ent / B.M.1950–323 [printed]; (3) *Afridigalia* ♂ / *walkeriana* Lehrer / Det. Dr. A. Z. Lehrer / 2004 [printed] The specimen has the ST5 flap and partly the genitalia exposed. It was published by Lehrer (2005: 77). • 1 female labelled (1) Mt. Mlanje, / Nyasaland, / 22.VIII.1913 / S.A.Neave [all printed except for third line, where the day and month are handwritten]; (2) Pres. by / Com.Inst.Ent / B.M.1950–323 [printed]. • 1 female labelled (1) Mt. Mlanje, / Nyasaland, / 16.IX.1913 / S.A.Neave [all printed except for third line, where the day and month are handwritten]; (2) Pres. by / Com.Inst.Ent / B.M.1950–323 [printed]. **BMSA: South Africa:** 1 male labelled (1) 24 30 CD / 5/20.U11.77 / DEPT. OF ENTOMOLOGY / UNIVERSITY OF PRETORIA [printed in white label, except first two lines which are handwritten]; (2) Ex. Dept. Entomology / University of Pretoria Coll. / Donated 2009 [printed on yellow label]; (3) Entomology Dept. / National Museum / P.O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 18169 [printed on white label, face down]; (5) KR's determination label. **CNC: Kenya:** 2 males labelled (1) Upper Imenti For. / Meru Dist. E. KENYA / July 1973 / E. Balyetagara; (2) KR's determination label. **IRD (5 males): Cameroon:** 1 male labelled (1) CAMEROUN / Dfoumselek / 8.10.64 / A. RICKENBACH ORSTOM [printed, lines 2 and 3 handwritten]; (2) KR's determination label. Greasy specimen. ST5 flap visible. Measurements: Frons at vertex / head width ratio: 35 / 120, length: 13mm. • 1 male labelled (1) CAMEROUN / Mboké (Nyong et / Mfoumou 18.11.70 / A. RICKENBACH ORSTOM [printed, lines 2 and 3 handwritten]; (3) KR's determination label. Greasy specimen. ST5 flap visible. Abdominal tip open, genitalia removed. Left wing absent, present on microscope slide under coverglass. Identifiable on hind tibial vestiture. Measurements: Frons at vertex / head width ratio: 34 / 120, length: 11mm. • 1 male labelled (1) CAMEROUN / Ekabita (Obala) / 25.6.66 / A. RICKENBACH ORSTOM [printed except lines 2 and 3]; (2) KR's determination label. The specimen has been dissected by KR. Dried abdominal tergites T1–5 glued to card above labels. ST1–2, ST3–5 and genitalia in glycerol in glass microvial above label no. 2. (No depression at middle in upper lip in dorsal view.) Measurements: Frons at vertex / head width ratio: 34 / 120, length: not available. **Central African Republic:** 1 male labelled (1) REP. CENTRAFICAINE / Bewiti (Bouar) / 15.2.62 / P. Finelle [printed label, except line 2, 3 and 4, latter handwritten over A. RICKENBACH ORSTOM printed text]; (2) 257 (3) KR's determination label [printed]. Abdominal tip open, genitalia (ST5 flap, etc.) removed. Dark specimen. Identifiable on hind tibial vestiture. Published by Rickenbach (1967: 47). Measurements: Frons at vertex / head width ratio: 35.5 / 120, length: 10mm. **Mozambique:** 1 male labelled (1) Maputo / Mozambique / 13.x.50 [handwritten]; (2) *Bengalia / depressa* / Walk. / det. Zumpt 50 [handwritten]; (3) KR's determination label [printed]. Good condition. Fore tibia with 1 ν spinous seta. ST5 flap clearly visible. Measurements: Frons at vertex / head width ratio: 35 / 120, length: 11mm. • **MNH: Kenya:** 2 males labelled (1) KENYA, MARSABIT N.P. / FORÊT SOKORTE DIKA 1500M / 12-13-XII-1972 / MICHEL BOULARD LEG. [printed on blue label]; (2) My determination label. **Cameroon:** 1 female labelled (1) CAMEROUN / Baigom / rég. Bamoun [printed]; (2) B. gaillardi [handwritten in pencil]; (3) My determination label as *B. depressa*. **Ethiopia:** 1 female labelled (1) Abyssinie / R. Ganale. 1400 / 14.7.1907 / H. Latham [handwritten]; (2) *Bengalia / depressa* / Wal [folded old label handwritten in ink; there is also some handwritten unintelligible text in pencil across right half]; (3) *B. depressa* [recent label, in pencil]; (4) My determination label. **NMNW: Zimbabwe:** 1 male from Nyanga National Park; see Kurahashi & Kirk-Spriggs (2006: 109) for full details. Given my determination label. **NMSA: Mozambique:** 1 male labelled (1) MAPUTO [14°50'S 40°43'E] MOZAMBIQUE / leg. DIAS. / IX.50 [handwritten]; (2) *Bengalia* ♂ / *depressa* Walker / det. Zumpt 50 [handwritten by Zumpt]; (3) NMSA-DIP / 17835 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. • 1 female labelled (1)

MAPUTO [14°50'S 40°43'E] MOZAMBIQUE / leg. DIAS. / IX.50 [handwritten]; (2) *Bengalia* ♀ / *depressa* Walk. det. Zumpt 50 [handwritten by Zumpt]; (3) NMSA-DIP / 57930 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. **South Africa: Eastern Cape:** 1 female labelled (1) Pt St John's [= Port St. John's 31°37' S, 29°33' E] / Cape / leg. Paterson [three printed lines on upper side of label] / Forest / 19.II.54 [handwritten on underside of label]; (2) *Bengalia* ♀ / *depressa* Walk. / det. Zumpt 54 [Zumpt's handwriting]; (3) NMSA-DIP / 17848 [white label with printed text facing down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. The head, left fore tibia and right mid leg are glued to card on pin above labels. • 1 female labelled (1) Port St. Johns / South Africa / B. & P. Stuckenberg / 20-25 Nov. 1961 [printed]; (2) *Bengalia* ♀ / *depressa* Walker / det. Zumpt 50 [handwritten by Zumpt]; (3) NMSA-DIP / 57934 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. **KwaZulu-Natal:** 1 male labelled (1) AMAMZINTOTI [sic = Amanzimtoti, 30°05'S 30°53'E] / NATAL / I. 1951; (2) *Bengalia* ♂ / *depressa* Walker / det. Zumpt 51 [handwritten by Zumpt]; (3) NMSA-DIP / 17845 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. • 1 male labelled (1) Scottburgh [30°17'S 30°45'E] / Natal, S. Africa / B. & P. Stuckenberg / 15.XI.63 [printed, except first and last line which are handwritten]; (2) *Bengalia* ♂ / *depressa* Walker / det. Zumpt 69 [handwritten by Zumpt]; (3) NMSA-DIP / 57935 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. • 1 female labelled (1) Scottburgh [30°17'S, 30°45'E] / Natal, S. Africa / B. & P. Stuckenberg / 15.xi.63 [printed, but first and last line handwritten]; (2) *Bengalia* ♀ / *depressa* Walker / det. Zumpt 69 [handwritten by Zumpt]; (3) NMSA-DIP / 57936 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. • 1 male labelled (1) Warner Beach / Natal / 20.I.1951; (2) *Bengalia* ♂ / *depressa* Walker / det. Zumpt 51 [handwritten by Zumpt]; (3) NMSA-DIP / 57938 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. • 1 female labelled (1) Warner Beach / Natal [handwritten]; (2) *Bengalia* ♀ / *depressa* Walk. / det. Zumpt 53 [handwritten by Zumpt]; (3) NMSA-DIP / 57937 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. • 1 female labelled (1) Hluhluwe / Zululand / leg. Zumpt / 18.1.50 [printed]; (2) *Bengalia* ♀ / *depressa* Walk. / det. Zumpt 50 [handwritten by Zumpt]; (3) NMSA-DIP / 17847 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. • 1 female labelled (1) Montebello region / Ndwedwe District / Natal, S. Africa / B. & P. Stuckenberg / 1 October 1961 [white printed label]; (2) *Bengalia* ♀ / *depressa* Walker / det. Zumpt 62 [handwritten by Zumpt]; (3) NMSA-DIP / 17749 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. • 1 female labelled (1) Pinetown [printed] / 18.1.09 [handwritten] / G.F.LEIGH [printed]; (2) *Bengalia* ♀ / *depressa* Walk. / det. Zumpt 50 [handwritten by Zumpt]; (3) NMSA-DIP / 57931 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. The specimen has been dissected by KR. ST1–5 and ovipositor in glycerol in glass microvial on pin between labels (4) and (5). The uterus and three spermathecae are kept in glycerol in second vial on separate pin labelled with specimen number 57931. **Mpumalanga:** 1 female labelled (1) MT CARMEL NW SIDE / 25°22'S, 30°44'E / 2530BC TRANSVAAL 1100M / 6 NOV. 70 STUCKENBERG / GRASSY HILLSIDE [printed]; (2) *Bengalia* ♀ / *depressa* Walker / det. Zumpt 79 [handwritten by Zumpt]; (3) NMSA-DIP / 17794 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. **Zimbabwe:** 1 female labelled (1) Laurenceville / Vumba 1.3.63 / DMCookson [handwritten]; (2) *Bengalia* ♀ / *depressa* Walker / det. Zumpt 64 [handwritten by Zumpt]; (3) NMSA-DIP / 17737 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. **OUMNH:** 15 specimens (7 males and 8 females) from the Bigot collection under *B. depressa*, as re-identified by Villeneuve and now placed under a single blue drawer label handwritten by Villeneuve reading “*Bengalia* / *limbata* Bigot. / D^r Villeneuve det. [this line printed] / sec. Typ. / Syn: / unicalcarata Villen.” At the end of the row of specimens is a label reading “All the above / = *B. depressa* Wlk.” in J.P. Dear's hand. I have not given any of these specimens my determination label, because specimens are on thin pins and difficult to handle. Note. Of these 15 specimens, 13 (7 males and 6 females) have the following two labels: (1) Ph. *depressa* [handwritten, “Ph.” = “Phumosia”] / EX. COLL. BIG. [printed]; (2) Oxford University / Museum of Natural / History (OUMNH). The latter has the text facing down. These 13 specimens are without locality label. One of the males (spec. 11) has an additional label between the usual

two labels: (2) “C’est l’espèce / africaine Beng. limbata / ♂ Bigot / (det. Villeneuve)” [folded label in Villeneuve’s hand]. One male (spec.2) has been dissected by KR. The dried abdominal tergites T1–5 are glued to card above labels. ST1–5 and genitalia in glycerol in glass microvial above label no. 3. The right fore tibia is absent. There is one strong plus a few very short spines on left fore tibia (Fig. 44). The remaining 2 specimens (both females) have the following two labels: (1) Circular magenta label with “S.Africa” handwritten on underside; (2) Oxford University / Museum of Natural / History (OUMNH). Thus these two are lacking a “Ph. depressa / EX. COLL. BIGOT” label.

To sum up the specimens in OUMNH bearing both a “Ph. depressa” and an “EX.COLL.BIGOT” label: 4 males and 2 females listed above under *B. peuhi*, 7 males and 6 females listed in the present section under *B. depressa*, and an unlisted single female specimen belonging to the *B. spinifemorata* species-group. Together these specimens are making up a total of 20 specimens. In addition there is an unlisted single male specimen, also belonging to the *B. spinifemorata* species-group, which carries a label reading “B. depressa [handwritten] / EX.COLL.BIG. [printed]”, making a total of 21 specimens labelled with “depressa” in some combination with “Ph.” or “B.”. In Verrall’s list of the contents of the Bigot collection are mentioned 1 female under “Bengalia depressa Walk.Big.” and 7 males and 11 females under “Phumosiya depressa Walk.”, i.e., 19 specimens. [The male and female *B. spinifemorata* species-group specimens stand under blue Villeneuve determination labels as *Bengalia spinifemorata* “Cotyp.” and both carry determination labels by J.P. Dear from 1977.]

4. *Bengalia floccosa* (Wulp, 1885)

Figs. 75–94.

Calliphora floccosa Wulp, 1885: CCXCII. Two “female” syntypes from South Africa collected by de Selys-Fansón, and originally housed in IRSNB, are considered lost. Neotype male (BMSA, examined), here designated. Type locality: South Africa, KwaZulu-Natal, Ndumo Game Reserve. For details, see below under Type material.

Ochromyia crassirostris Karsch, 1888: 377. Holotype female (MNHUB, examined), by monotypy [listed as “Usambara 1♀”; “type” or equivalent expression not used]. Type locality: Tanzania, Usambara.

Bengalia crassirostris: Bezzi 1908: 77. Eritrea (doubtful record).

Note. Bezzi used this combination when citing Karsch’s paper (1888), even though Karsch did not (cf. previous entry).

Bengalia floccosa: Villeneuve 1914: 254. Malawi, Zambia.

Note. Villeneuve described both males and females, remarking that “la coloration tire fréquemment sur le blond obscur”. Villeneuve cites material from “Nyasaland” (“Mt-Mlanje”, S.A. Neave), and “N. W. Rhodesia”. He cites his own usage of Wulp’s name as “sec. type”. What this expression exactly means is unclear. He may have compared the specimens before him with Wulp’s type(s), examined first hand, or compared them with Wulp’s description. No further details are given to explain its meaning. The interpretation of the “sec. typ.” expression that he actually examined Wulp’s types is perhaps too kind to him. If he did, he should have discovered and noted the mis-sexing of Wulp’s syntypes, see below under Type material.

Bengalia mercenaria Séguy, 1933: 78. Holotype male (MNH, examined), by original designation. Type locality: Mozambique (“Zambèze / Nova Choupanga / près Chemba”).

Bengalia floccosa: Zumpt 1956: 170, 169 fig. 99. Reported from Democratic Republic of Congo, Tanzania, South Africa, Zimbabwe.

Bengalia floccosa: Zumpt 1956: 171. One male and 1 female listed as type material from Usambara, but that is an error, only a single female type was described by Karsch from Usambara, see above under entry for *O. crassirostris*.

Bengalia floccosa: Pont 1980: 791. Catalogue entry.

Afridigalia adrianponti Lehrer, 2005: 26. Holotype male (BMNH, not examined), by original designation. Type locality: Tanzania (“Amani. Tanganyika”). Synonymy discussed in Rognes (2006).

Note. According to Lehrer’s description, *A. adrianponti* is based on a single dark specimen.

Afridigalia falsimonia Lehrer, 2005: 40. Holotype male (BMNH, not examined), by original designation. Type locality: Malawi (as “Nyasaland”). Synonymy discussed in Rognes (2006).

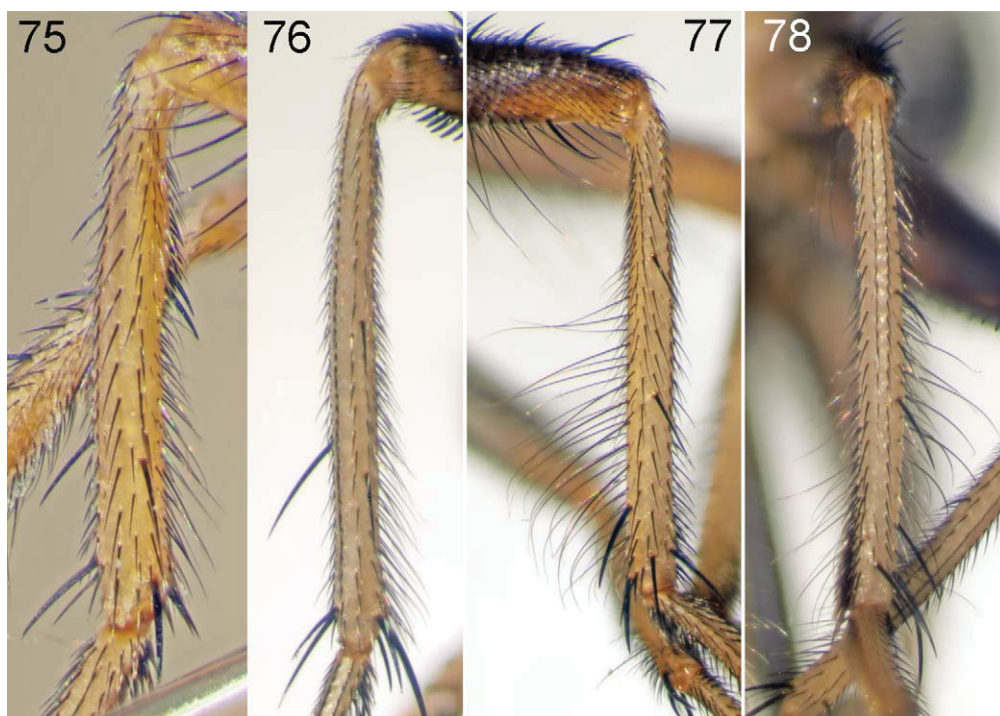
Note. *Afridigalia falsimonia* is based on three pale specimens. Lehrer’s key (2005: 25) separates *adrianponti* from *falsimonia* on the shape of the antler as it appears in his drawings in lateral view. Obviously, in view of Lehrer’s (2011b) method of making his preparations (which involves heat, bergamot oil and Canada balsam), this fragile structure has assumed slightly different positions when Lehrer made the preparations, making chance events the basis for his species differentiation.

Afridigalia falsimonia: Lehrer 2006: 7. South Africa, Angola, Democratic Republic of Congo, Kenya, Malawi (as “Nyassaland”), Tanzania, Zimbabwe.

Afridigalia zouloupyga Lehrer, 2006: 5. Holotype male (BMNH, not examined), by original designation. Type locality: Malawi (as “Nyassaland”), Chitola Stream 10 mi W. of Domira Bay. Synonymy discussed in Rognes (2006).

Note. *Afridigalia zouloupyga* was based on two pale specimens with narrow dark posterior marginal bands on the abdominal tergites. No effort was made by Lehrer to describe the features by which it is supposed to differ from *B.*

adrianponti or *B. falsimonia*. There are differences in the appearance of the antler in the published lateral-view drawings of *B. zouloupyga*, *B. falsimonia* and *B. adrianponti*, in addition to differences between the figures of the exact shape of the distal part of the ST5 flap, all of which I take to be result of individual variation. Interestingly, according to Lehrer (2006: 6) the holotype was captured by S.A. Neave and is labelled “*Bengalia floccosa* Wulp, sec. typ.” in Villeneuve’s hand. It is thus a specimen Villeneuve seems to have identified on the basis of a comparison with the Wulp type (“sec. typ.”), although such a conclusion may be too kind to Villeneuve (see synonymy above, in note to the *B. floccosa*: Villeneuve, 1914 entry). Regarding the body colour of *B. zouloupyga*, *B. falsimonia* and *B. adrianponti* (pale or dark), Villeneuve (1914: 255) notes that whereas “*B. spinifemorata* ...et ... *B. Peuhi*” vary least in colour, other *Bengalia* species (including *B. floccosa*) are “châtain, pouvant devenir tantôt pâles avec une pruinosisé clairsemée, tantôt foncées avec une pruinosisé condensée [chestnut brown, sometimes pale with sparse pruinosity, sometimes dark with dense pruinosity]”. Nothing of this is discussed by Lehrer, who appears not have read Villeneuve’s papers.



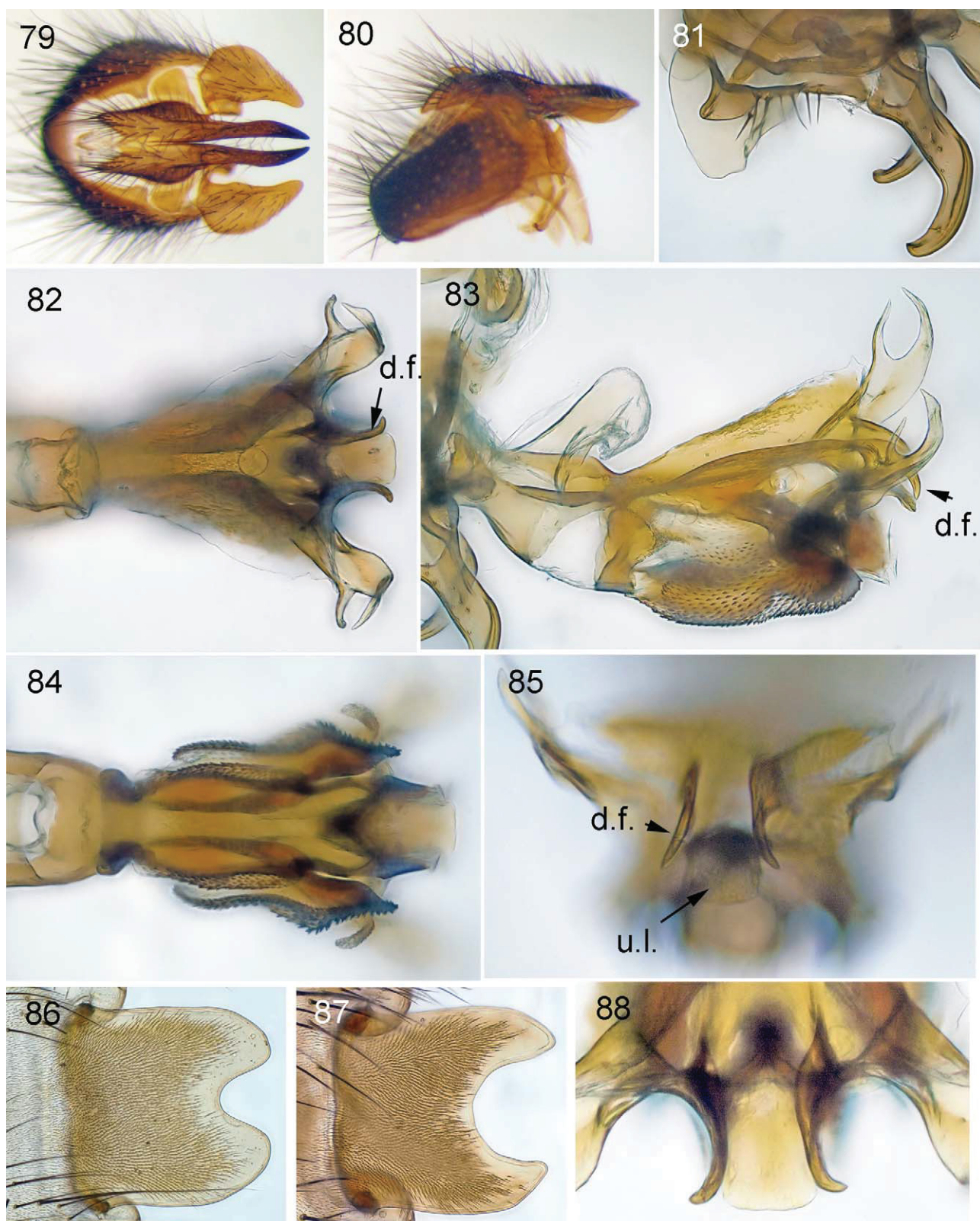
FIGURES 75–78. *Bengalia floccosa* (Wulp), male (all from specimen from Kenya, in KR). **75.** Left fore tibia, posterior view. **76.** Left mid tibia, posterior view. **77.** Left hind tibia, anterior view. **78.** Right hind tibia, dorsal view.

Diagnosis. *Male.* Length: 10–13mm (n=5). Frons at vertex / head width ratio: 0.28–0.31 (mean 0.31, n=5). A species identifiable in the male sex by the unique shape and configuration of the upper lip and distal finger in the distiphallus, as seen in lateral view, in combination with the diagnostically shaped ST5 flap, but care should be taken to ensure that all of the posterolateral parts are observed.

Thorax often with dark pleura. Anepimeron with a bundle of dark setulae in upper part, lower part with numerous pale setulae. Femora usually dark, only one specimen seen has pale femora. Fore tibia with distinct spine-like setae ventrally in proximal half and a short fringe of thin setae distally. Mid tibia with a short fringe. Hind tibia with a dense fringe of long thin setae on the lower two thirds of *av*, *v* and *pv* surfaces.

Abdominal colour variable: pale with narrow dark bands, or very dark throughout, except that T1+2 and T3 shows slight yellowish translucence at middle on each side. A male in CNC has two strong and two weak discal setae on each side of the regular pair on T5.

ST5 flap with medial U-shaped excavation; the corner at the lateral edge of the excavation is rounded or sharp, whereas the corner where the remainder of the hind edge meets the lateral edge of the ST5 flap is evenly rounded. Distal finger clearly visible in lateral view of the distiphallus, not hidden from lateral view by the vertical sheet of sclerotisation passing between the upper lip and base of antler; distal finger projecting forward and curving downward in lateral view, in dorsal view situated slightly laterad of the upper lip. Upper lip a square projection about as long as broad as seen from above and slightly curved in lateral view.



FIGURES 79–88. *Bengalia floccosa* (Wulp), male (79–86, 88 from specimen from Kenya, in KR; 87 from holotype of *B. mercenaria*, in MNHN). 79. Cerci and surstyli, posterior view. 80. Cerci and surstyli, lateral view. 81. Pre- and postgonites, left. 82. Distiphallus, dorsal view. 83. Distiphallus, left lateral view (a little from above). 84. Distiphallus, ventral view. 85. Distiphallus, apical view, focus on distal fingers. 86. ST5 flap. 87. ST5 flap. 88. Details of distiphallus, dorsal view. Abbreviations: *d.f.* = distal finger; *u.l.* = upper lip.

Female. Length: 8–12mm (n=4). Frons at vertex / head width ratio: 0.32–0.33 (mean 0.32, n=3). ST2 with pair of long strong black median marginal setae, a few weak setae outside each seta in pair, no black setae along lateral margin. Strong marginal pair of setae also on ST3 and ST4. Hind margin of T5 with an area of weak sclerotisation behind the marginal setae with an anterior delimitation shaped like a strongly curved edge, like in *B. depressa* (cf. Fig. 68). In ovipositor ST6 broad and undivided, as in *B. depressa*, but without a basal narrow “handle” set off from the rest of the ST6. ST7 with a large circular unsclerotised midventral area, occupying nearly the proximal two thirds of the length of ST7. Spermathecae relatively long and narrow compared to those of *B. depressa*. The cerci and epandrium short, not upturned, and with soft, not spinous, setae only [1 female dissected, a specimen collected together with males at the same time and place].

Discussion. The different appearance of the antler among Lehrer’s (2005) drawings of *A. adrianponti*, *A. falsimonia* and *A. zouloupyga* are likely to be artifacts, or due to different angles of view.

Biology. The material I have examined was collected from January–May, and from October–December. The dates given by Lehrer (2005, 2006) are within these ranges. Zumpt (1956) gives no dates outside these ranges. Thus *B. floccosa* seems not to be on the wing in the period from June to September. A male has been captured with an “hemerobe” (Neuroptera, Hemerobiidae) as its prey (holotype of *B. mercenaria*). Nothing else is known about its biology and habits.

Distribution. Angola, Democratic Republic of Congo, *Kenya, Malawi, *Mozambique, *South Africa, *Tanzania, Zambia, *Zimbabwe. The records from Namibia by Kurahashi & Kirk-Spriggs (2006) are rejected because they were based on misidentified material; see below under *B. tibiaria*.

Material examined. Type material. *Calliphora floccosa* Wulp, 1885. **NEOTYPE** male, here designated, in BMSA, labelled (1) Malaise traps / broad-leaved deciduous / woodland; (2) RSA: KZN, Ndumo Game R. / main camp area at: / 26°54.652'S 32°19.719'E / 27-30.xi.2009 / A.H.Kirk-Spriggs; (3) Entomology Dept. / National Museum / P. O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 13758; (5) NEOTYPE (m) / *Calliphora floccosa* / Wulp, 1885: CCXCII / K.Rognes des. 2012 [printed on red label]. The specimen has been dissected. The dried T1–5 are glued to a piece of card above the labels, the genitalia are in glycerol in a glass microvial above the neotype label.

Wulp based his species on “deux exemplaires femelles de l’Afrique australe (de Selys-Fanson)” (p. CCXCIII), de Selys-Fanson being the collector. He added that the specimens were “[p]armi les Diptères exotiques du Musée Royal d’Histoire Naturelle à Bruxelles [= IRSNB], que le zélé conservateur, M. Preudhomme de Borre, a bien voulu me confier dans le but de les examiner et de les déterminer...” (p. CCLXXXVIII). The syntypes are now not present in IRSNB, MRAC, RMNH or in ZMAN. They may not have been returned, and are probably lost.

There is good reason to assume that Wulp mis-sexed the specimens before him. He described the hind legs as having the “tibiis posticis hirsutis [hind tibia with long hairs]” (p. CCXCII), and “hérissées de longs poils au côté extérieur [with long hairs on the external side]”. Thus, in hindsight, we can say with confidence that he observed and reported the secondary male sexual characteristics of the hind legs. Being apparently unfamiliar with the genus *Bengalia*, he assigned his new species provisionally to the genus *Calliphora*. He noted that the elongate body, the total absence of metallic reflections from the abdomen and the peculiar pilosity of the hind legs might justify the erection of a separate genus for it. Most likely he thought his specimens were females because of the broad frons, “aussi large que les yeux [as broad as the eyes]”, since the males in *Calliphora*, unlike the males in *Bengalia*, usually have a very narrow frons.

Villeneuve possibly had seen one of the Wulp types; one of the specimens studied by Lehrer when erecting *Afridigalia zouloupyga* has a label to this effect. See entry for this nominal species in the synonymy, above.

No name-bearing types now exist for *Calliphora floccosa* Wulp, 1885. The name has been in use for a long time, but has been involved in misidentifications, since never having been adequately characterised by reference to genital characters (one male in NMSA has been identified by Zumpt as *B. gaillardi*, another male from the same locality as *B. cuthbertsoni*, both identifications were made in 1979). It is involved in complex taxonomic problems involving several Afrotropical *Bengalia* species, i.e., the five species making up the *B. floccosa* subgroup of the *B. peuhi* species-group where, at present, not all females can be safely identified. Lehrer (2005: 18) has claimed that *Calliphora floccosa* is to be counted among nominal taxa “désignées, sans base scientifique, comme espèces valides”, because the description is based (allegedly) on unrecognisable females. Lehrer has obviously not read Wulp’s original description, and formed an independent opinion. Instead of fixing the interpretation of the old name by designating a neotype, or continuing the use of the name according to the understanding of the current authority (Zumpt 1956), Lehrer (2005, 2006) described several

new species under various names such as “*Afridigalia adrianponti*”, “*Afridigalia falsimonia*” and “*Afridigalia zouloupyga*”, even though all obviously belong to the same taxon as the one denoted by Zumpt (1956) as *Bengalia floccosa* (Wulp) on genital features. However, one should be aware that Zumpt himself (1956: 171) only distinguished male *C. floccosa* from other *Bengalia* males on the shape of the ST5 flap and the vestiture of the hind tibia. Even though he figured the distiphallus in profile view (Zumpt 1956: 169 fig. 99 upper figure) in a way that clearly showed the unique configuration of the upper lip and distal finger, he never employed this feature to diagnose *C. floccosa*. In order to clarify the status of the nominal taxon *C. floccosa* I find it best to designate a neotype so that there no longer is any doubt about the identity of the name (Article 75.3.1 of ICZN 1999).

Wulp (1885: CCXCII–CCXCIII) described the abdomen as having “les deux premiers segments testacés à bord postérieur noir; les autres noirs, à reflets blanchâtres surtout à la moitié antérieurs des segments; ventre d’un brun rougeâtre [the two anterior segments testaceous with black hind margins; the others black, with whitish reflections particularly on the anterior half of the segments; ventrally reddish brown]”. The legs were described as being “fauves à cuisse noires; jambes postérieures hérissées de longs poils au côté extérieurs [yellowish with black femora; hind legs densely clothed with long hairs on the external side]”. Thus it is evident that he had a rather dark specimen before him, with dark femora and abdomen with all dark T4 and T5 and partly dark T1+2 and T3. I have therefore selected a specimen from South Africa with these features as close to the description as I could find as neotype for *Calliphora floccosa* Wulp.

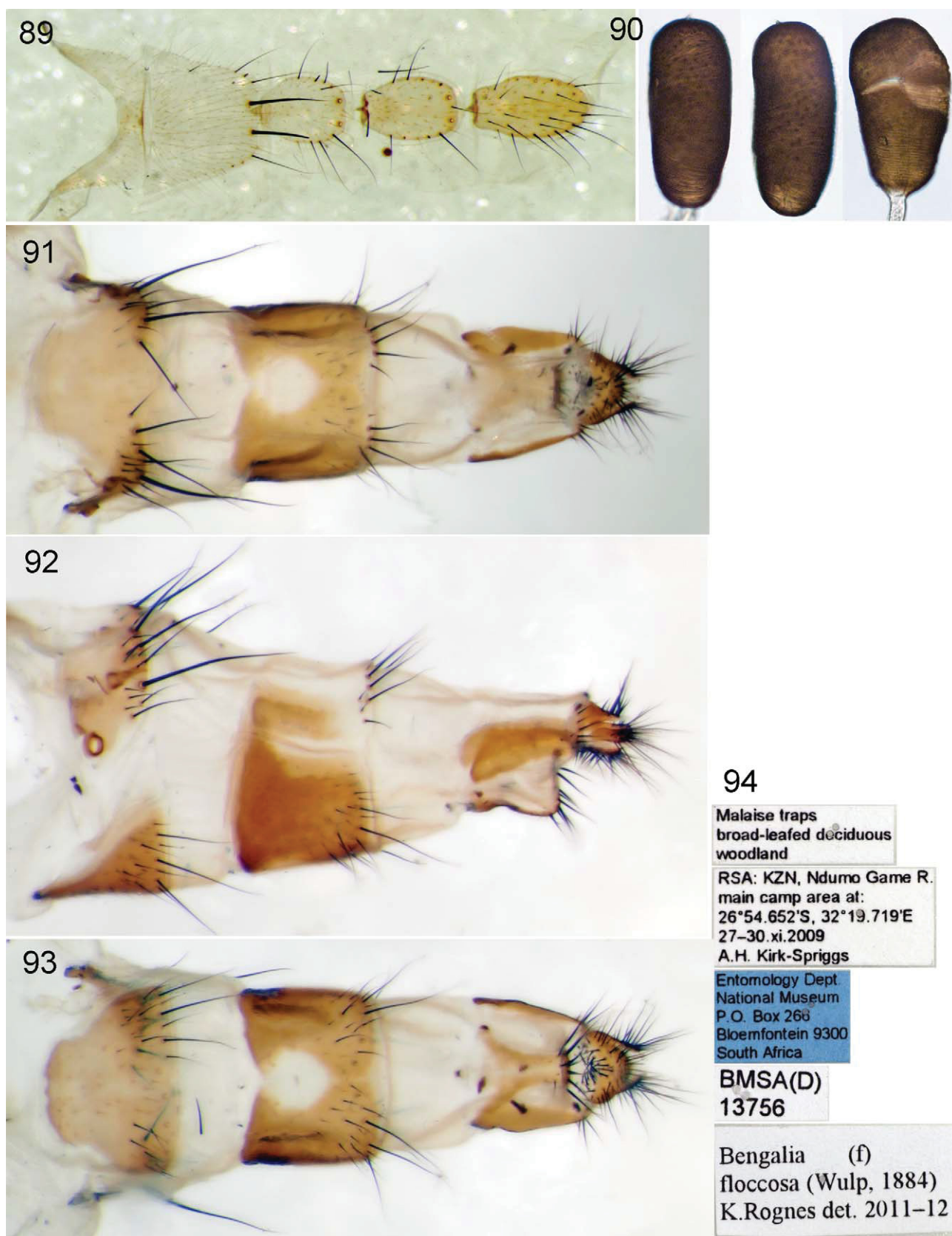
I here designate a specimen in BMSA (numbered 17758) as neotype for *Calliphora floccosa* Wulp, 1885: CCXCII. It is labelled as cited above. Its characters fit the description, except that the T1+2 and T3 are very dark, only a small spot of yellow slips through the dark colouring. The type locality is in South Africa as were the specimens on which Wulp’s name was based. It has been dissected and the genitalia conform to the description above.

Ochromyia crassirostris Karsch, 1888: 377. Karsch described *O. crassirostris* from a single female from Usambara (a mountain area in NE Tanzania). **Holotype** female, in MNHUB, labelled (1) Usambara / C. W. Schmidt / Febr – März 86 [printed on blue label]; (2) Type [printed on red label]; (3) 13841 [printed]; (4) *Ochromyia / crassirostris* / N. [handwritten; N. may mean Neu, or Nobis = our species]; (5) *Bengalia* ♀ / *floccosa* Wulp. / det. Zumpt 51 [Zumpt’s handwriting]; (6) Zool. Mus. / Berlin [printed]; (7) HOLOTYPE (f) / *Ochromyia crassi- / rostris* Karsch, 1888 / [“1887”]: 377 / K. Rognes 2012 [printed on red label]; (8) KR’s determination label as *B. floccosa*. ST2–4 each have a strong pair of median marginal setae as in Fig. 89. The specimen is of the pale type with yellow abdomen and thorax with narrow abdominal marginal bands.

Bengalia mercenaria Séguy, 1933: 78. **Holotype** male, in MNHN, labelled: (1) Prédatrice avec / sa proie (Hémérobe) / 31 déc [handwritten on white label]; (2) COTYPE [red print on white label]; (3) MUSEUM PARIS / ZAMBÈZE / NOVA CHOUPANGA / PRÈS CHEMBA / P. LESNE 1929 [printed on blue label]; (4) Dissected by K. Rognes det. 2011 [printed label, except first line and year of last line which are handwritten]; (5) HOLOTYPE / *Bengalia* (m) / *mercenaria* / Séguy, 1933: 78 / (by original designation) / K. Rognes 19.iv.2011 [printed on red label]. Dissected by KR. Genitalia in glass microvial on pin below labels. Dried abdomen glued to card above labels, but below card bearing the prey’s wings. **Paratype**. MNHN: 1 male labelled (1) TYPE [red print on white label]; (2) *Bengalia / mercenaria* / Séguy / TYPE [handwritten by Séguy]; (3) PARATYPE / *Bengalia* (m) (not f!) / *mercenaria* / Séguy, 1933: 78 / (believed by Séguy / to be female) / K. Rognes 19.iv.2011 [printed on red label].

Séguy described *B. mercenaria* on the basis of specimens he believed to be of both sexes, but the two specimens under *B. mercenaria* in MNHN are both males. No symbols are present on the labels to show how Séguy sexed the specimens. Both specimens are in good condition with all legs intact. The male holotype of *B. mercenaria* is rather dark, and fits the description of Wulp of his syntypes of *Calliphora floccosa*. It is darker than the other, has a blue Lesne locality label and carries a pierced prey insect. This is clearly the one referred to by the words “... type ♂ (P. Lesne) capturé avec sa proie (Hémérobe)”. Séguy erroneously cites the date as “3 décembre”, whereas the uppermost handwritten label reads “31 déc.”. The loose wings of the “Hémérobe” were found in the box and were glued to a card below main part of the prey insect by KR. This specimen, even though labelled as COTYPE, is the holotype by original designation and I have labelled it as such. I have dissected it.

The second specimen, paler than the first, has no locality labels, but carries two Séguy “TYPE” labels. Even though a male I accept it as a paratype since it agrees with the description “♀: comme le mâle, de couleur plus pâle”. I have given it a red paratype label.



FIGURES 89–94. *Bengalia floccosa* (Wulp), female (all from specimen from South Africa, Ndumo Game Reserve, BMSA(D) 13756, in BMSA). **89.** ST1–5. Note sockets revealing lost pair of strong setae on ST3 and ST4. **90.** Spermathecae. **91.** Ovipositor, dorsal view. **92.** Ovipositor, left lateral view. **93.** Ovipositor, ventral view. **94.** Labels on dissected specimen (5).

Other material. BMSA: South Africa: Eastern Cape: 1 female labelled (1) OOS – LONDEN [East London] / SE 3327 BB / 10 IV 1994 / H. VAN NUUREN [?] / DEPARTMENT OF ENTOMOLOGY / UNIVERSITY OF PRETORIA [handwritten, except last two lines which are printed]; (2) Ex Dept. of Entomology / University of Pretoria Coll. / Donated 2009 [printed on yellow label]; (3) Entomology Dept. / National Museum / P. O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 18156 [printed on white label, text facing down]; (5) KR's determination label as *B. floccosa*. • **KwaZulu-Natal:** 1 male 4 females labelled: (1) Malaise traps / broad-leafed deciduous / woodland: (2) RSA: KZN, Ndumo Game R. / main camp area at: / 26°54.652'S 32°19.719'E / 27-30.xi.2009 / A.H.Kirk-Spriggs; (3) Entomology Dept. / National Museum / P. O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 13757 / [1 male] / 13759 / 13760 / 13755 / 13756 (dissected) [4 females] [printed on white label, text facing down] (5) KR's determination label as *B. floccosa*. The dissected female has the dried T1–5 glued to a card above the labels, the ovipositor and spermathecae are in glycerol in a glass microvial above label (5). • 7 males 2 females labelled: (1) Malaise traps / sand & broad-leafed / deciduous forest: (2) RSA: KZN, Ndumo Game R. / main road at: / 26°54.288'S 32°17.974'E / 4-8.xii.2009 / A.H.Kirk-Spriggs; (3) Entomology Dept. / National Museum / P. O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 16749 / 17032 / 17033 / 17034 / 17035 / 17152 / 17484 [7 males] / 17031 / 17153 [2 females] [printed on white label, text facing down]; (5) KR's determination label as *B. floccosa*. • 1 female labelled: (1) Malaise traps / grassy / floodplain; (2) RSA: KZN, Ndumo Game R. / pan at: / 26°54.288'S 32°17.974'E / 9-10.xii.2009 / A.H.Kirk-Spriggs; (3) Entomology Dept. / National Museum / P. O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 17483 [printed on white label, text facing down]; (5) KR's determination label as *B. floccosa*. • **Limpopo:** 1 male labelled (1) N-TVL [= Northern Transvaal] Tzaneen / RSA 6.iv.1996 / 30°10'S 23°50'E / Z. Liebenberg [printed on white label]; (2) Ex Dept. of Entomology / University of Pretoria Coll. / Donated 2009 [printed on yellow label]; (3) Entomology Dept. / National Museum / P. O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 18153 [printed on white label, text facing down]. Note. Pale specimen, femora hardly dark, narrow dark abdominal bands. Dissected by KR 7.i.2012. • **? province:** 1 male labelled (1) SE 25° 31' Ac [? = South East 25 degrees 31 minutes of Ac] / 5-X-1980 / H.P. VAN WALT [?] / DEPARTMENT OF ENTOMOLOGY / UNIVERSITY OF PRETORIA [handwritten, except last two lines which are printed]; (2) Ex Dept. of Entomology / University of Pretoria Coll. / Donated 2009 [printed on yellow label]; (3) Entomology Dept. / National Museum / P. O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 18171 [printed on white label, text facing down]. Note. Pale specimen. Dissected by KR. **Zimbabwe:** 1 male labelled (1) P. MILES. / VUMBA / FEB. 1968 [handwritten, except first line which is printed in bluish letters]; (2) Ex Dept. of Entomology / University of Pretoria Coll. / Donated 2009 [printed on yellow label]; (3) Entomology Dept. / National Museum / P. O. Box 266 / Bloemfontein 9300 / South Africa [printed on blue label]; (4) BMSA(D) / 11353. Note. Pale specimen. **CNC: Tanzania:** 1 male labelled (1) TANGANYIKA / Same / 25 [handwritten] Mai 1962; (2) KR's determination label; 1 male labelled (1) TANGANYIKA / Same / Mai 1962; (2) KR's determination label. **IRD: Zimbabwe:** 1 male labelled (1) Chikwedziwa / Rhodesie / HBS rec 10/59 [handwritten]; (2) KR's determination label. Measurements: Frons at vertex / head width ratio: 39 / 120, length: 11mm. **? country:** 1 male labelled (1) KR's determination label. [No locality label]. Measurements: Frons at vertex / head width ratio: 37 / 120, length: 11mm. **KR: Kenya: Coast Province:** 1 male labelled (1) KENYA – Coast province / 7 KM W Kakoneni, 100 m / UTM 37 M 588225 9647804 / 24.V.2006 (hand net) / D.Avesani, G.Carpaneto, G.Nardi / & P.Cerretti leg. [printed]; (2) KR's determination label as *B. floccosa*. Dissected by KR. • 1 male labelled (1) Kenya – Coast province / N edge of Arabuko Sokoke Forest / UTM 37 M 607257 9644873 / 83 m, 24.V.2006 (hand net) / D.Avesani, G.Carpaneto, G.Nardi / & P.Cerretti leg. [printed]; (2) KR's determination label as *B. floccosa*. **MNHUB: Tanzania (Iringa Region):** 1 male labelled (1) Nyassa-See / Langenburg / 3.X.-4.XI.96 / Fülleborn S [blue printed label; the year is 1896]; (2) crassirostris [handwritten label]; (3) Bengalia ♂ / floccosa Wulp. / det. Zumpt 51 [handwritten by Zumpt]; (4) Zool. Mus. / Berlin [printed]; (5) My determination label as *B. floccosa*. Note. The current name for Langenburg is Lumbira at Lake Nyasa, Iringa Region, Tanzania. This specimen is of the pale type with yellow abdomen and thorax with narrow abdominal marginal bands. **NMSA: South Africa: KwaZulu-Natal:** 1 male labelled (1) South Africa, Natal Prov / Zululand, 20 mi.S.Ndumu / Game Res.Camp (2732Aa) / Nov.29.1971 (ME&BJ Irwin / dry scrub forest; 320ft. [printed white label]; (2) Bengalia ♂ / gaillardi S & G. / det Zumpt 79 [Zumpt's handwriting]; (3) NMSA-DIP / 17708 [white label, print facing down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label as *B. floccosa*. Note. Zumpt had extracted the epandrium with cerci and

surstyli and glued the complex to a card above the labels. The ST5 flap was intact and clearly visible on the tip of the abdomen when I received the specimen. T1–5 very dark, with only traces of yellow shining through on T1+2 and T3 laterally. I have dissected it. ST1–5 and the remainder of the genitalia in glycerol in glass microvial on pin above label (5). Dried T1–5 glued to same card as the extracted cerci and surstyli. • 1 male labelled (1) South Africa: Natal / Ndumu Game Reserve / Rest camp 2632Cd 95m / 23–9:XI:1977 Malaise / Brothers & J. Guillard mod [printed]; (2) *Bengalia* ♂ / *cuthbertsoni* Zpt. / det Zumpt 79 [handwritten by Zumpt]; (3) NMSA-DIP / 17843 [white label, print facing down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label as *B. floccosa*. Note. The cerci and surstyli have been extracted by Zumpt and are glued to a card above the labels, the left surstylus is absent. The ST5 flap is intact and clearly visible at the tip of the abdomen. Aedeagus appears to be intact inside the tip of the abdomen, but not extracted by Zumpt. Abdomen and femora all dark. Head glued to thorax and there is a lot of glue on right fore leg. The spine-like setae on the ventral side of the right fore tibia visible through the glue. Left fore leg, right mid leg and left hind tibia lost. I have dissected the abdomen. ST1–5 and the remainder of the genitalia in glycerol in glass microvial on pin above label (5). Dried T1–5 glued to same card as the extracted cerci and surstyli. • 1 female labelled (1) Tete Pan // Zululand // leg. Paterson [printed on upper side] 26/4/55 [pencil writing on underside]; (2) *Bengalia* ♀ / *floccosa* Wulp. / det. Zumpt 55 [handwritten by Zumpt]; (3) NMSA-DIP / 17849 [printed, face down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label. Note. The specimen was placed in collection under *B. depressa*. It has a pair of strong black setae along hind margin of ST2 (opposite the condition in *B. depressa*), and a conspicuous area of weak sclerotisation at the hind margin of T5 (as in *B. depressa*). **RMNH / ZMAN: Kenya:** 1 male labelled (1) MALINDI / 5 & 6. I. 1968 [printed]; (2) KENYA / Kilifi / D. Gillissen / L. Blommers; (3) KR's determination label. Dissected by KR. Genitalia and abdominal sternites in glass microvial in glycerol above label (3). Dried abdominal tergites glued to card above label (1). A mid leg also glued to the card.

5. *Bengalia gaillardi* Surcouf & Guyon, 1912

Figs. 95–118.

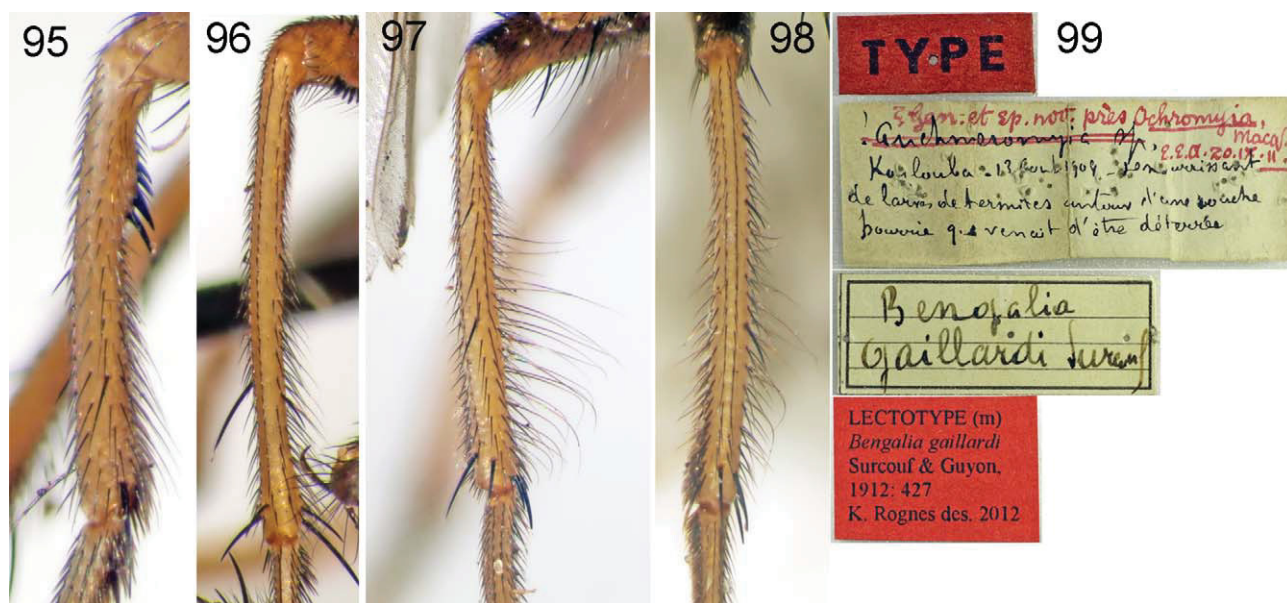
- Bengalia spurca* Brauer & Bergenstamm, 1891: 420. *Nomen nudum*. [As “*spurca* Wd litt. Guinea” under “*Bengalia* R. D.”] Note. Villeneuve (1914: 253) wrote “*Bengalia spurca* Br. et Berg. type = *Gaillardi* Surcouf type)” (unbalanced parentheses in original).
- Bengalia depressa*: Surcouf & Guyon 1912: 426, unnumbered figure of the genitalia of a male specimen. Misidentification, not *depressa* Walker. A female and male received from Guinea [“...reçu de Alin Hauet, Administrateur adjoint des Colonies en Guinée”]. Note. The dentate flanges of the antlers are clearly visible in the drawing, as well as the deep excavation on the medial side of distal half of the surstylus and the strong curvature of the cerci in profile. These features show that the specimen illustrated belongs to *Bengalia gaillardi*.
- Bengalia gaillardi* Surcouf & Guyon, 1912: 427. Lectotype male (MNHN, examined), by present designation. Type locality: “Koulouba”, Niger – Chad boundary. [Not found on maps. There is a locality in Chad named Kouloudia, at 13°01'26"N 15°16'30"E, which may be the same. If this is correct, the type locality is in Chad.] Note. Villeneuve (1914: 253) reports to have seen the male type[s] in Paris, stating, about a specimen he found of another nominal species, as being “= *Gaillardi* Surcouf type”.
- Bengalia gaillardi*: Villeneuve, 1913a: 153. Described the male fore tibia (in the footnote) and the female ovipositor.
- Bengalia spurca* Villeneuve, 1914: 253. Note. Villeneuve (1914: 253) claims to have seen the male “type” [= a typical specimen?] of *spurca* Brauer & Bergenstamm in their collection in NMW], as being “= *Gaillardi* Surcouf type)” (cf. entry for *spurca* B& B, above).
- Bengalia spurca*: Malloch 1927: 410. Nigeria (Ibadan), Ivory Coast, Niger (Maradi), Togo.
- Bengalia gaillardi*: Zumpt 1956: 170. Gambia, Sierra Leone, Liberia, Togo, Ivory Coast, Nigeria, Uganda, Tanzania (as Tanganyika), Namibia (as S.W.Africa), Democratic Republic of Congo.
- Bengalia gaillardi*: Rickenbach, Hamon & Ovazza, 1962: 137. Guinea (as Guinée), Burkina Faso (as Haute Volta), Ivory Coast (as Cote d'Ivoire).
- Bengalia gaillardi*: Rickenbach 1967: 47. Central African Republic.
- Bengalia gaillardi*: Pont 1980: 791. Catalogue entry.
- Afridigalia gaillardi*: Lehrer 2005: 42, 44 fig. 17A–E. Angola, Democratic Republic of Congo, Ghana, Sierra Leone.
- Afridigalia lubana* Lehrer, 2005: 50, 51 fig. 20A–E. Holotype male (MSNM, not examined), by original designation. Type locality: Nigeria (Onisata). Note. Synonymy introduced and discussed by Rognes (2006).

Afridigalia sanaga Lehrer, 2005: 67, 68 fig. 29A–E. Holotype male (TAU, not examined), by original designation. Type locality: Cameroon (Bambalang). Paratypes recorded from Kenya, Nigeria and Chad.

Note. Synonymy introduced and discussed by Rognes (2006). The features used by Lehrer (2005) in his key on pp. 25–26 to distinguish his various nominal species regarding the structure of the surstylus in lateral view are obviously very sensitive to the exact angle of view and cannot be given weight. Interestingly, by only showing a lateral view, Lehrer has not shown or noted the rather deep excavation on the inside of the surstylus of *B. gaillardi* as seen in posterior view.

Afridigalia gaillardi: Lehrer 2006: 8. Angola, Democratic Republic of Congo, Ghana, Liberia, Nigeria, Malawi (as “Nyassaland”), Uganda, Sierra Leone, Sudan.

Bengalia gaillardi: Kurahashi & Kirk-Spriggs 2006: 61. I have examined all 27 specimens reported by them from Namibia under this name, but 12 of these have been misidentified and belong to other taxa. For details about the misidentified specimens, see Material examined, entry for NMNW, below.



FIGURES 95–99. *Bengalia gaillardi* Surcouf & Guyon, male (95, 96 from specimen from Nigeria, Kafin Soli, in NMSA; 97, 98 from specimen from Ghana, Sankwatta in ZMUN; 99 from lectotype in MNHN). **95** Left fore tibia, posterior view. **96** Left mid tibia, posterodorsal view. **97**. Right hind tibia, anterior view [absence of strong *av* seta in lower sixth is an aberration]. **98**. Right hind tibia, dorsal view. **99**. Labels (4).

Diagnosis. Male. Length: 12–14mm (n=4). Frons at vertex / head width ratio: 0.32–0.33 (mean 0.33, n=3). Recognisable by the shape of the ST5 flap as in Fig. 106 (care should be taken to ensure that all of the posterolateral parts are observed) in combination with a row of several strong ventral spine-like setae on fore tibia and a strong fringe on the hind tibia.

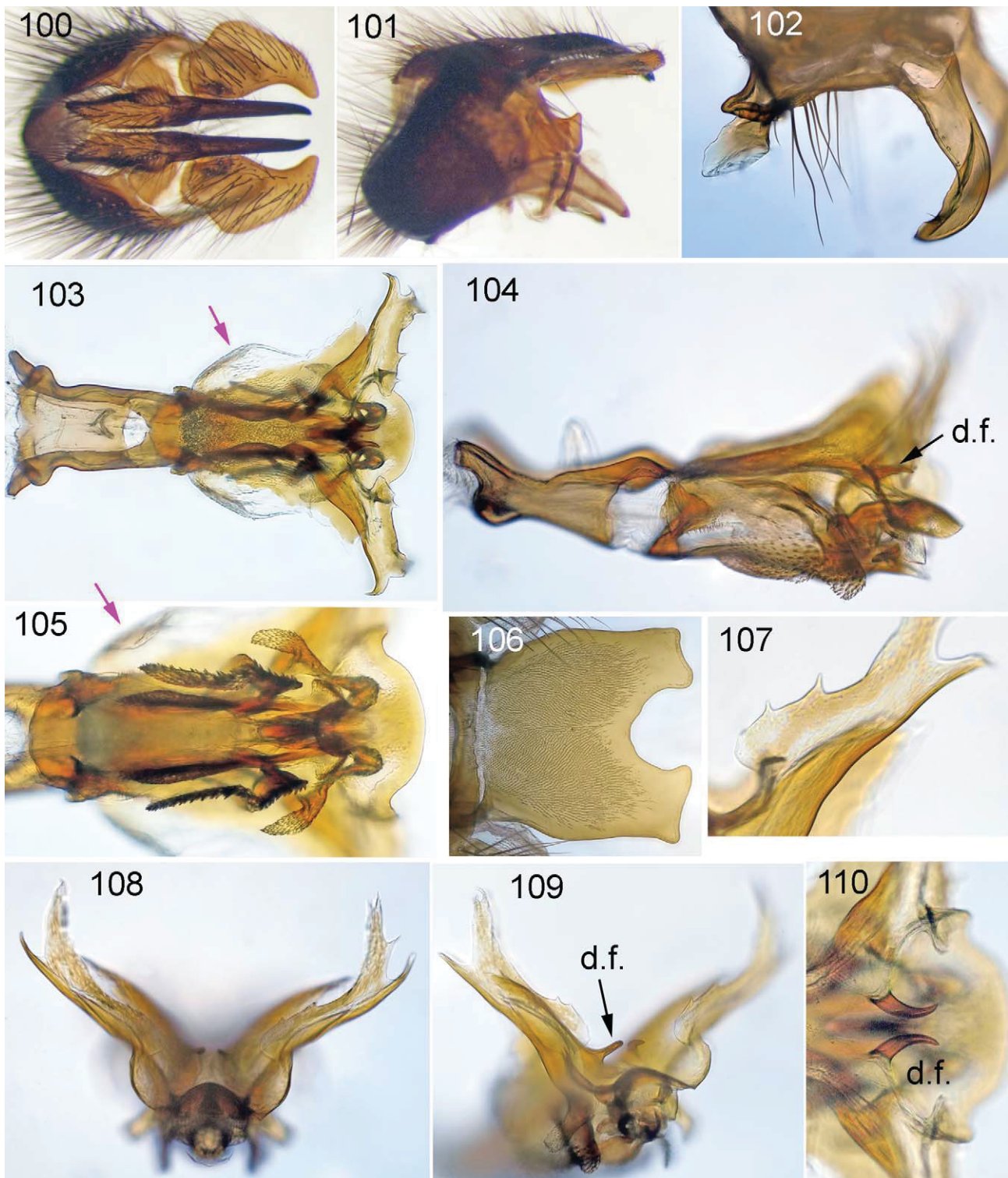
Anepimeron with a bundle of black setulae in upper part, lower part with pale setulae only. Fore tibia with a row of strong ventral spine-like setae on proximal third, strongest about as long as diameter of tibia. Hind tibia with a fringe on lower two thirds, rather dense on *av* and *v* surfaces, usually also affecting the *pv* surface slightly.

ST2–4 broad and densely clothed with long pale thin setae. ST5 flap with a conspicuous medial U-shaped, sharply set-off excavation in the middle third of the hind edge, the lateral parts of the hind edge usually forming two sharp corners on each side, one at the exit of the excavation, the other towards the lateral edge of ST5 flap; the hind edge of the ST5 flap rather transverse.

Cerci strongly curved in lateral view. Inner edge of surstylus in posterior view with a pronounced excavation distally. Bacilliform sclerite process, triangular and blunt.

In distiphallus the hind two thirds of the dorsolateral wing visible in dorsal and ventral views as a transparent projecting sheet, with a convex lateral border (Figs. 103, 105). The outermost part of the edge appears slightly folded down. Antler with prominent flange along the anterior edge with 4–9 conspicuous projecting teeth or serrations from base to tip of antler. Upper lip strongly projecting in lateral view, distal edge semicircular in dorsal view, laterally with two distinct small emarginations, deeply concave below as seen from front. Distal finger slightly curved in dorsal view; proceeding almost horizontally forwards, in lateral view; the tip of each finger pointing forwards and slightly laterally, the extreme tip being situated slightly medial to a line drawn through the

base of the distal finger and parallel with the longitudinal axis of the distiphallus; tip of distal finger separated from distal edge of upper lip by a distance longer than the finger itself.



FIGURES 100–110. *Bengalia gaillardii* Surcouf & Guyon, male (all from specimen from Ghana, Sankwatta, in ZMUN). **100.** Cerci and surstyli, posterior view. **101.** Cerci and surstyli, lateral view. **102.** Pre- and postgonites, left. **103.** Aedeagus, dorsal view (magenta arrow points to detail of dorsolateral wing). **104.** Aedeagus, left lateral view. **105.** Distiphallus, ventral view (magenta arrow points to detail of dorsolateral wing). **106.** ST5 flap. **107.** Detail of right antler of distiphallus, oblique view from slightly below. **108.** Distiphallus, apical view. **109.** Distiphallus, oblique apical view. **110.** Details of distiphallus, dorsal view, showing distal fingers. Abbreviations: *d.f.* = distal finger.

Female. Length: 9–14mm (n=4). Frons at vertex / head width ratio: 0.32–0.33 (mean 0.32, n=3). ST2 with short and very strong spinous setae along hind margin; similar setae along lateral and hind margins of ST3–5, sometimes in several rows laterally. There is usually a narrow middle part of the hind edge of ST2–5 that is not occupied by strong setae. T5 without a concave area of un- or weakly sclerotised membrane middorsally at the hind end behind the marginal setae. T6 sclerotised rather extensively, mostly around spiracles but also medially. T7 and T8 rather broad rods. ST6 narrow basally and broad distally, as usual in *Bengalia*, but divided almost completely along midventral line. ST7 also divided completely. Epiproct and cerci elongate, possibly fused to each other apically (but details very difficult to make out, cf. Figs. 116, 117), with long strong spine-like setae in addition to soft curved ones, forming a long, narrow, up-curving, sting-like ovipositor tip. [1 ovipositor examined.]

Discussion. The fundamental properties of the distiphallus of *B. gaillardi* are not revealed in Lehrer's (2005: 25–26) key or his drawings of the genitalia. The complex structure of the *B. gaillardi* antler, with an elongate fragile flange with a row of pointed processes, is likely to have been disturbed by Lehrer's method of genitalia preparation. To me this explains the different appearance of the antler in his figures of *Afridigalia gaillardi* (Lehrer 2005: 44 fig. 17C), *A. lubana* (Lehrer 2005: 51 fig. 20C) and *A. sanaga* (Lehrer 2005: 68 fig. 29C); none of them are particularly true to the real version. In all these figures it is also evident that he has seen the distal finger, but not understood or employed its structure for comparative purposes, since he has seen it only in lateral view. Similarly, the clear and expanded area of the posterior part of the dorsolateral wing in *B. gaillardi* (cf. Figs. 103, 105) can be recognised in his figures, but they have been somewhat deformed before having been illustrated.

Biology. The capture dates in the material I have examined are from January–April, and from June–December. The dates for the correctly identified specimens in Kurahashi & Kirk-Spriggs (2006: 62) are January, March, April and December. Lehrer (2005, 2006) reports dates from the periods January–February, April–August and November–December. Thus, *B. gaillardi* has been captured all the year round. Also captured on board steamships.

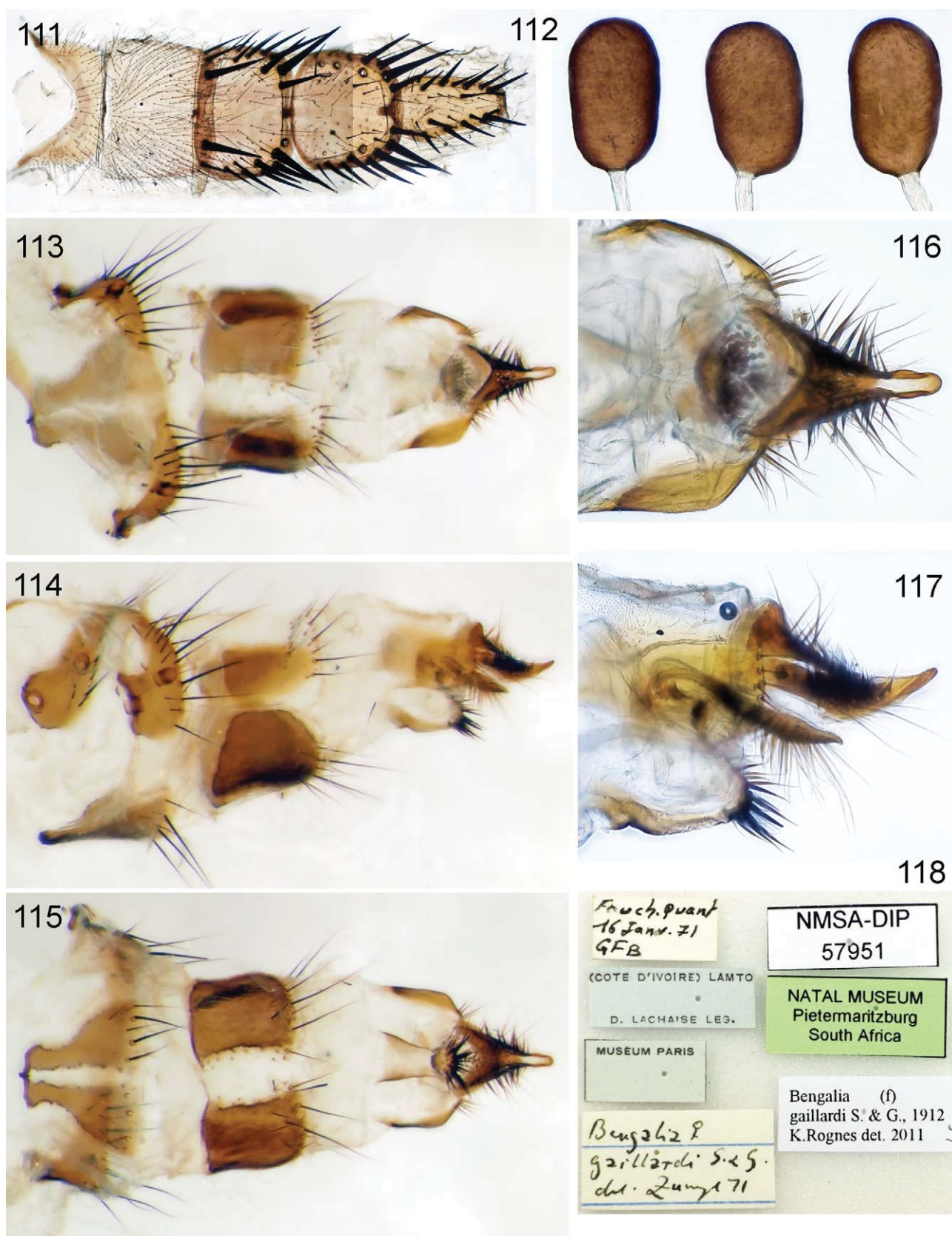
Distribution. Angola, Benin, Burkina Faso, *Cameroon, *Chad / Niger boundary, *Chad, *Democratic Republic of Congo, Gambia, *Ghana, Guinea, *Ivory Coast, Kenya, *Liberia, Malawi, Mali, *Namibia, Niger, *Nigeria, South Africa, *Senegal, Sierra Leone, Sudan, Tanzania, Togo, *Uganda. [The locality “Nala” reported by Lehrer (2006: 8) to be in Congo is in fact situated in the Democratic Republic of Congo.]

Material examined. Type material. *Bengalia gaillardi* Surcouf & Guyon, 1912. **Lectotype** male, here designated, in MNHN, labelled: (1) TYPE [black print on red label]; (2) Auchmeromyia sp. / Koulouba – 13 Aout 1908 – se nourissant / de larves de termites autour d'une souche / pourrie qui venait d'être déterrée [Original handwritten text in black ink. The first line is streaked out by a double red line, and the following handwritten text in red ink added on the top of the label] ? Gen. et sp. nov. près *Ochromyia*, / (Macq. / E.E.A. 20.IX.11. [E.E.A is E. E. Austen at the BMNH, who is stated to have examined the specimen]; (3) *Bengalia* / *Gaillardi* Surcouf [handwritten by Surcouf]; (4) My lectotype label (Fig. 99).

This species was described on the basis of two specimens received from “Dr. Gaillard, membre de la Mission de délimitation de la frontière Niger-Tschad, ...”. The specimens were feeding on termite larvae surrounding a rotten tree-root having just been dug out of the ground. The locality was given as Koulouba, which I have not found on any map. There is a locality in Chad named “Kouloudia”, at 13°01'26"N 15°16'30" E, which may be the same. If this is correct, the type locality is in Chad. In MNHN is now only a single male which I have labelled and here designate as the lectotype of *Bengalia gaillardi* Surcouf & Guyon, 1912. It is in good condition and all legs, except the left mid tibia are intact. It fits the description. The genitalia are in an exerted position, but the ST5 flap cannot be seen. The pronounced excavation in the medial side of the surstylus is visible. In the dried distiphallus the distal fingers and the characteristic flanges of the antlers are visible. The fore tibia is as in Fig. 95, and the hind tibial fringe does not involve the *pv* side of the tibia. The abdominal posterior marginal dark band on T3 is almost as broad as one half of the segment length, on T4 about one fourth, and very narrow on T5.

Other material. CNC: Uganda: 1 male labelled (1) Budongo Forest nr / Lk. Albert UGANDA / 1000 M Apr 1972 / E. B. Babyetagara; (2) KR's determination label; **Nigeria:** 1 male labelled (1) N. NIGERIA / Zaria, / Samaru, / 20.vi 1968 [printed; in last line only 196 printed, other numbers handwritten]; (2) J. C. Deeming / m.v.trap; (3) KR's determination label. This specimen has the genitalia exposed and the antlers and distal fingers clearly visible. **MNHN: Cameroon:** 1 female labelled (1) Sud – Cameroun / Yaoundé-Nkolbisson / 16 Octobre 1967 / Leg. L. Tsacas [printed on blue label; number 16 in line 3 is handwritten]; (2) MUSEUM PARIS [printed on blue label]; (3) My determination label. **Guinea:** 1 female labelled (1) Boffa – Guinée / sédit [?rédit] Surcouf [ink handwritten]; (2) *Bengalia* / *depressa* / Wlk (Surc.) [handwritten, ink]; (3) *Bengalia* / *depressa* / Walk. [handwritten]

ink]; (4) *B. depressa* [long label handwritten in pencil on white paper; to distinguish it as one of the five specimens placed under “*depressa*” borrowed from MNHN]; (5) My determination label as *B. gaillardi*. This is a typical female of *B. gaillardi*, with very strongly armed abdominal sternites. **Ivory Coast:** 1 female labelled (1) LAMTO (Toumodi) / Côte d’Ivoire / PNBS35 19.11.63 [printed, last line handwritten]; (2) MUSEUM PARIS / COLL. E.N.S. PARIS [printed on blue label]; (3) COTE D IVOIRE / LAMOTTE ET COLLAB. [printed on blue label]; (3) My determination label. • 1 female labelled (1) LAMTO (Toumodi) / Côte d’Ivoire / PNB 29.10.63 [printed, last line handwritten]; (2) MUSEUM PARIS / COLL. E.N.S. PARIS [printed on blue label]; (3) COTE D IVOIRE / LAMOTTE ET COLLAB. [printed on blue label]; (3) My determination label. **Senegal:** 1 male labelled (1) SENEGAL M’BOUR / St. ORSTOM / 30-VII-1981 / B. SIGWALT leg. [printed on blue label]; (2) Piège / lumineux [printed]; (3) My determination label. **NMNW: Namibia:** 5 males and 10 females from various Namibian localities listed by Kurahashi & Kirk-Spriggs (2006: 62) under *B. gaillardi*. Unfortunately, there are 12 misidentifications among the total of 27 records listed, as follows: the female from Kaross is *B. peuhi*; a male from Salambala forest (dissected by KR), a male from Hamoye Nat. Forest, 4 males and 4 females from Nama and a male from 10 km W Dussi, all listed under *B. gaillardi*, are misidentified *B. tibiaria*; for details see sections where *B. peuhi* and *B. tibiaria* are treated. These records must be deleted from list of *B. gaillardi* in Namibia. I have given all material my determination label. **NMSA** [7 males and 6 females]: **Democratic Republic of Congo:** 1 male labelled (1) MUSÉE DU CONGO / Tembisa (Thysville) [now = Mbanza-Ngungu] / 1934 / A. Leghos [handwritten except line 1]; (2) Bengalia ♂ / gaillardi S & G. / det. Zumpt 55 [handwritten by Zumpt]; (3) NMSA-DIP / 57947 [printed]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR’s determination label as *B. gaillardi*. **Ghana:** 1 male labelled (1) GOLD COAST / Nthn. Territory / Zuarungu / 30.vi.1949 / J. Bowden / Rest House, lights. [handwritten except lines 1 and 5 which are printed]; (2) NMSA-DIP / 17728 [printed]; (3) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (4) KR’s determination label as *B. gaillardi*. • 1 female (staged) labelled (1) GOLD COAST / Ejura / 22.viii.1947 / J. Bowden / 477/47 [handwritten except lines 1 and 5 which are printed]; (2) Bengalia / spurca B.B. van Emden det. 1948 [handwritten, last line is printed except last digit]; (3) NMSA-DIP / 17715 [printed]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR’s determination label as *B. gaillardi*. • 1 female (staged) labelled (1) GOLD COAST / Ejura / 22.viii.1947 / J. Bowden / 476/47 [handwritten except lines 1 and 5 which are printed]; (2) NMSA-DIP / 57940 [printed]; (3) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (4) KR’s determination label as *B. gaillardi*. **Ivory Coast:** 1 female labelled (1) Fauch. Quant / 16 Janv. 1971 / GFB [handwritten]; (2) (COTE D’IVOIRE) LAMTO / D. LACHAISE LEG [printed on blue label]; (3) MUSÉE PARIS [printed on blue label]; (4) Bengalia ♀ / gaillardi S & G. / det. Zumpt 71 [handwritten by Zumpt]; (5) NMSA-DIP / 57951 [printed]; (6) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (7) KR’s determination label as *B. gaillardi*. Note. The specimen has been dissected. The dried abdominal tergites T1–5 are glued to a card above the labels; ST1–5, ovipositor and spermathecae are in glycerol in glass microvial below label 6. **Liberia:** 1 female labelled (1) Bendu / Robertsport / Liberia [printed]; (2) II.7.1943 / F.M.Snyder [printed, except month, day and last digit in year which are handwritten]; (3) Bengalia ♀ / gaillardi S & G. / det. Zumpt 52 [handwritten by Zumpt]; (4) NMSA-DIP / 57949 [printed]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR’s determination label as *B. gaillardi*. **Namibia:** 1 male labelled (1) Warmbad / S.W.A. [= South West Africa]; (2) Bengalia ♂ / gaillardi S & G. / det Zumpt 50 [handwritten by Zumpt]; (3) NMSA-DIP / 17722 [printed]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR’s determination label as *B. gaillardi*. • 1 female labelled (1) Okakuejo / S.W.Africa / 13.III.1971 [printed]; (2) Bengalia ♀ / gaillardi S & G. / det. Zumpt 71 [handwritten by Zumpt]; (3) NMSA-DIP / 57945 [printed]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR’s determination label as *B. gaillardi*. • 1 female labelled (1) Kaolo Otavi / S.W.A. (upper side of label) / Mus. Exp. / Mar. 1926 (lower side of label) [printed]; (2) Bengalia ♀ / gaillardi S & G. / det. Zumpt 50 [handwritten by Zumpt]; (3) NMSA-DIP / 57946 [printed]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR’s determination label as *B. gaillardi*. **Nigeria:** 1 male labelled (1) Maiduguri / Nigeria / 4.xi.1942 / F. Snyder [printed, except day, month and last digit in year]; (2) Bengalia ♂ / gaillardi S & G. / det Zumpt 51 [handwritten by Zumpt]; (3) NMSA-DIP / 57948 [printed]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR’s determination label as *B. gaillardi*. • 1 male labelled (1) N. Nigeria / Kafin Soli / 15.ix.1951 / J Bowden 297/51 [handwritten]; (2) NMSA-DIP / 17716; (3) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (4) KR’s determination label as *B. gaillardi*.



FIGURES 111–118. *Bengalia gaillardii* Surcouf & Guyon, female (all from specimen from Ivory Coast, NMSA-DIP 57951, NMSA). **111.** ST1–5, note empty sockets for lost strong setae on ST4. **112.** Spermathecae. **113.** Ovipositor, dorsal view. **114.** Ovipositor, left lateral view. **115.** Ovipositor, ventral view. **116.** Tip of ovipositor, dorsal view. **117.** Tip of ovipositor, left lateral view. **118.** Labels on dissected specimen (7).

On board a steam ship: 1 male labelled (1) Cape Verdi / 30.ix.1923 / G.v.Son / SS Rietfontein [handwritten] [captured on board the steam ship SS Rietfontein?]; (2) Bengalia ♂ / gaillardi S & G. / det Zumpt 79 [handwritten by Zumpt]; (3) NMSA-DIP / 17718 [printed]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label as *B. gaillardi*. Note. The epandrium, cerci and surstyli are glued as a unit to a card above the labels. Cerci very narrow and a large medial excavation in each surstylus. The ST5 flap is *in situ* on the abdominal tip. **Uganda:** 1 male labelled (1) Buamba / Uganda / 17.VI.1946; (2) Bengalia ♂ / gaillardi S & G. / det. Zumpt 55 [handwritten by Zumpt]; (3) NMSA-DIP / 17723 [printed]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (5) KR's determination label as *B. gaillardi*. **ZMUN:** **Ghana:** 1 male labelled: (1) Gold Coast / N. Territories. / Sankwatta / 13.IX.1916 / Dr. J.J.Simpson [handwritten]; (2) Department of Zoology / Natural History Museum / University of Oslo / (ZMUN) / World collection [printed]; (3) KR's determination label. I have dissected the specimen, which was placed very low on the pin. On a separate pin are the dried abdominal tergites T1–5 glued to a card and the dissected genitalia in glycerol in a glass microvial below the card. This pin has been labelled with small photographs of the original labels. • 1 male labelled (1) GOLD COAST / N TERRITORIES / TOMAKLAW / 1 2 1916 / Dr. J. J. SIMPSON [printed]; (2) Department of Zoology / Natural History Museum / University of Oslo / (ZMUN) / World collection [printed]; (3) Bengalia / spurca B.B. / van Emden 1944 [handwritten; last line is printed except last digit which is handwritten]; (4) KR's determination label. The specimen is staged. It has been dissected by KR. The left fore leg and the dried abdominal tergites T1–5 are glued to a card above the labels. The dissected genitalia are in glycerol in a glass microvial below label 3. **RMNH / ZMAN:** **Chad:** 1 male labelled (1) TCHAD / BEBEDIJA / Near Moundou / 12.VII.1970 / J.H.&M. Lourens [printed except 12.VII. which is handwritten]; (2) KR's determination label. • 1 male labelled (1) AFRICA TCHAD / BEBEDIJA 400m / near Moundou / 8. VIII.1970 / J.H. & M.Lourens [printed except 8.VIII which is handwritten]; (2) KR's determination label. **On board a steam ship:** 1 female labelled (1) H. ENGEL leg. / a.b.S.S. "Windhoek" / Golf v. Guinee / 24.viii.1938 [handwritten except first line which is printed [second line interpretation: an bord S.S. "Windhoek", thus on board a steam ship]; (2) KR's determination label.

6. *Bengalia roubaudi* Rickenbach, Hamon & Mouchet, 1960

Figs. 119–139.

Bengalia roubaudi Rickenbach, Hamon & Mouchet, 1960: 155, 156 fig. 1. Holotype male (IRD, examined), by original designation. Type locality: Democratic Republic of Congo, Brazzaville. For more details, see below.

Bengalia roubaudi: Zumpt 1962b: 241.

Bengalia roubaudi: Pont, 1980: 791. Catalogue entry.

Afridigalia roubaudi: Lehrer 2005: 65, 66 figs. 28A–E. Angola (Congulu).

Afridigalia roubaudi: Lehrer 2006: 9. Angola (Congulu).

Diagnosis. *Male*. Length: 9–11mm (n=4). Frons at vertex / head width ratio: 0.23–0.26 (mean 0.25, n=4). Easily recognisable by the shape of the ST5 flap and the strikingly narrow frons for a *Bengalia* species.

Anepimeron with predominantly dark setulae, lower ones may appear yellowish in some lights; very few truly yellow setulae present in lower hind corner. Fore tibia without short v spine-like setae. Mid tibia without a fringe. Hind tibia with a very sparse fringe consisting of 5–7 thin setae on *av* surface only, about as long as or slightly longer than width of tibia.

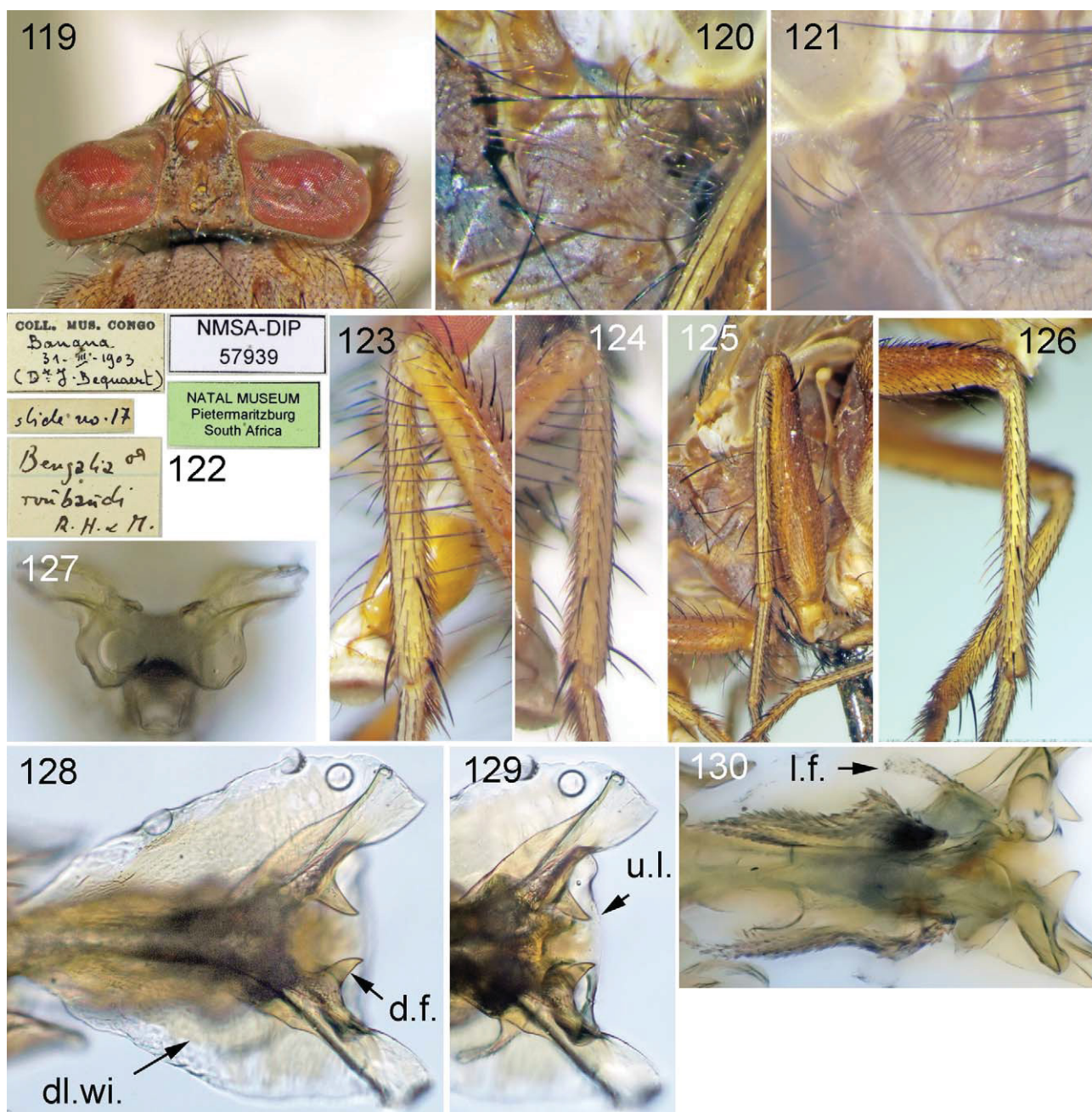
ST5 flap (Fig. 133) distally convex.

Distiphallus with a distal finger shaped like strongly sclerotised short peg, a little shorter than the one in *B. depressa*, hidden from lateral view by sclerotisation proceeding from upper lip to base of antler. Each finger proceeding obliquely mediad and distad in dorsal view. Upper lip almost straight in dorsal view, a small emargination laterally on each side; strongly concave on underside in front view. Dorsolateral wing as in Fig. 128. Tip of antler claw-like, a short basal tooth opposing the curved distal tip (Fig. 132).

Female. Unknown.

Discussion. The species is very rare. The convex ST5 flap is unique for a *Bengalia*.

Biology. Capture dates for the material I have examined are from March, April and November. The Angola specimen from "Congulu" in BMNH was captured in April ("iv") according to the label, not September ("IX") as given by Lehrer (2006: 9).



FIGURES 119–130. *Bengalia roubaudi* Rickenbach, Hamon & Mouchet, male (119–126 from specimen from Democratic Republic of Congo, Banana, NMSA-DIP 57939, in NMSA; 127–130 from specimen from Angola in BMNH). **119.** Head, dorsal view. **120.** Left anepimeron. **121.** Right anepimeron. **122.** Labels (5). **123.** Left fore tibia, posterior view. **124.** Right fore tibia, posterior view. **125.** Left mid tibia, posterior view. **126.** Left hind tibia, anterior view. **127.** Distiphallus, apical view. **128.** Distiphallus, dorsal view; focus on distal fingers. **129.** Part of distiphallus, dorsal view; focus on upper lip. **130.** Part of distiphallus, ventral view. Lateral finger lost on right side. Abbreviations: *d.f.* = distal finger; *dl.wi.* = dorsolateral wing; *l.f.* = lateral finger; *u.l.* = upper lip.

Distribution. *Angola, *Democratic Republic of Congo.

Material examined. Type material. *Bengalia roubaudi* Rickenbach, Hamon & Mouchet, 1960. **Holotype** male, in IRD, labelled (1) BRAZZAVILLE / IEC 15.11.59 / J. Hamon réc [handwritten]; (2) BENGALIA / roubaudi n. sp. / A. Rickenbach ORSTOM dét. [handwritten in blue ball-point pen], except last line, which is printed; a dotted line present along upper and lower edge of label; whole label coloured red by red pencil; (3) 143 [handwritten in blue]. The specimen has the tip of the abdomen removed. The genitalia are on a separate slide.



FIGURES 131–139. *Bengalia roubaudi* Rickenbach, Hamon & Mouchet, male (131–135 from holotype in IRD; 136–139 from specimen from Democratic Republic of Congo, Banana, NMSA-DIP 57939, in NMSA). **131.** Cerci and surstyli, Canada balsam mount on slide 143. **132.** Pre- and postgonites, aedeagus, left lateral view, Canada balsam mount on slide 143. **133.** ST5 flap. Canada balsam mount on slide 143. **134.** Slide 143. **135.** Labels on pin of holotype (left three labels), right label from paratype. **136.** Cerci and surstyli, Canada balsam mount on slide 17. Magenta arrow points to left bacilliform sclerite process. **137.** Aedeagus, right lateral view, Canada balsam mount on slide 17. **138.** Labels on slide 17. **139.** Pre- and postgonites, left, Canada balsam mount on slide 17. Abbreviations: d.f. = distal finger.

Note. Rickenbach, Hamon & Mouchet (1960: 157) described the species on the basis of two males and stated that “L’holotype et le paratype sont conservés à l’Institut d’Enseignement et de Recherches Tropicales...” [now = IRD]. The holotype is not labelled with a holotype label and the authors did not specify in the original publication which of the two identically labelled specimens is the holotype. However, the holotype has the “n.sp.” label (label no. 2 above) coloured all over with red, and a small label (“143”) referring to a numbered microscope slide. The slide with the dissected genitalia is labelled “Holotype” / “143” / “Bengalia / roubaudi / n.sp. / Brazzaville” so there is no doubt which specimen is the holotype. The slide has two small circular and one large square cover slip for (from left to right) the distiphallus, the ST5 and ST5 flap, and the flat-mounted cerci and surstyli. **Paratype. IRD:** 1 male (1) BRAZZAVILLE / IEC 15.11.59 / J. Hamon réc.; (2) BENGALIA / roubaudi n.sp. / A. Rickenbach ORSTOM dét. [handwritten, except last line, which is printed; a dotted line present along upper and lower edge of label; a broad oblique red line crosses the label, colouring by red pencil]. Note. The “n.sp.” label has obviously been furnished with the broad oblique red line to distinguish it from the holotype. This specimen has not been dissected.

Other material. BMNH: Angola: 1 male labelled (1) ANGOLA: / Congulu. / iv. 1934. / K.Jordan. / B.M.1934-435 [printed]; (2) *Afridigalia* ♂ / *roubaudi* (R.,H. & M.) / Det. Dr. A.Z.LEHRER / 2005 [pinhole in the middle of the label]; (3) *Afridigalia* ♂ / *roubaudi* (R.,H. & M.) / Det. Dr. A.Z.LEHRER / 2005 [pinhole towards the right end of the label]; (4) My determination label. The specimen had been dissected by Lehrer. The genitalia, consisting of the epandrial complex, the hypandrial complex with aedeagus, a large flat piece of unknown identity, whereas the ST5 flap was lacking, were in glycerol in a big plastic vial when received by me. The genitalia were removed from the vial by slitting it across with a scalpel, and the various parts transferred to glycerol in a glass microvial which was placed under the original labels. For a description of the condition of the specimen, see section Material and methods, above. **NMSA: Democratic Republic of Congo:** 1 male labelled: (1) COLL.MUS.CONGO / Banana / 31- III – 1903 / (Dr. J. Bequaert) [handwritten except first line which is printed]; (2) slide no. 17 [Zumt’s handwriting]; (3) Bengalia / roubaudi / R. H. & M. [Zumt’s handwriting]; (4) NMSA-DIP / 57939 [printed]; (5) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (6) KR’s determination label. The accompanying slide no. 17 in NMSA examined. It is labelled: (Upper label) Bengalia / roubaudi R., H., & M. / ♂ term. 17; (Lower label) Banana / Belg. Congo / 31.III. 1903 [both labels in Zumt’s handwriting]. Genitalia squashed flat in Zumt fashion.

7. *Bengalia tibiaria* Villeneuve, 1926

Figs. 140–173.

? *Bengalia depressa*: Villeneuve, 1913a: 153, lines 9–13; female only. Misidentification, not *depressa* Walker. More on this in a note at the end of the section Diagnosis, female, below.

Bengalia tibiaria Villeneuve, 1926: 69. Holotype male (MRAC, examined), by monotypy. Type locality: Democratic Republic of Congo, Beni à Lesse. [For a discussion of the confusion concerning the status of this and another specimen identified by Villeneuve as *B. tibiaria*, see below under Type material.]

Bengalia cuthbertsoni Zumt, 1956: 171. Holotype male (NMSA, examined), by original designation. Type locality: Zimbabwe, Balla-Balla. **Syn. nov.**

Bengalia cuthbertsoni: Zumt 1956: 174. Zambia (Ndola), South Africa (Pretoria). Material not seen.

Bengalia tibiaria: Zumt 1956: 164, 174. Erroneous entry in synonymy with *B. depressa*.

Bengalia tibiaria: Zumt 1962b: 240. Democratic Republic of Congo (Rutshuru). Specimen examined.

Bengalia tibiaria: Zumt & Stimie 1965: 8. A single male from Zimbabwe (Mapembe). Not examined.

Bengalia cuthbertsoni: Pont 1980: 791. Catalogue entry.

Bengalia tibiaria: Pont 1980: 791. Catalogue entry.

Afridigalia cuthbertsoni: Lehrer 2005: 31. Namibia [a specimen with several labels, one of which is stated to read “... S.W. Africa (W48), Komba, 1–6.IV.1972”, is miscited to be from Madagascar by Lehrer; the locality name must refer to Kombat in Namibia], Zambia (same specimen from Ndola as reported earlier by Zumt). Not seen.

Afridigalia tibiaria: Lehrer 2005: 73. Democratic Republic of Congo (Beni à Lesse, Rutshuru). Both specimens examined. Lehrer gives the capture date of the Beni à Lesse specimen as “fin IV 1911”, but this is an error (cf. Fig. 153).

Bengalia cuthbertsoni: Kurahashi & Kirk-Spriggs 2006: 60, 109. Namibia and Zimbabwe. I have examined all the material identified by Kurahashi & Kirk-Spriggs as *B. cuthbertsoni* (Namibia and Zimbabwe), which includes several dissected specimens, both by Kurahashi and by myself.

Bengalia floccosa: Kurahashi & Kirk-Spriggs 2006: 61, 109. Misidentifications, not *floccosa* Wulp. I have examined all their material from Namibia, Zambia and Zimbabwe which include material dissected both by the authors and by myself. For details, see Discussion, below.

Bengalia gaillardi: Kurahashi & Kirk-Spriggs 2006: 62. Misidentifications, not *gaillardi* Surcouf & Guyon, which apply to 1

male from Salambala forest (dissected by Kurahashi), 1 male from Hamoye Nat. Forest, 4 males and 4 females from Nama and 1 male from 10km W of Dussi (all in Namibia).

Bengalia cuthbertsoni: Rognes 2006: 468.

Bengalia cuthbertsoni: Rognes 2009: 14–15.

Bengalia tibiaria: Rognes 2009: 14–15.

Diagnosis. The safest and simplest way to identify males of this species is to look at the shape of the distal finger in dorsal view. Females are easily identified on the presence of stiff spinous setae on an elongate and upturned ovipositor tip, in combination with presence of usual weak setae on the hind and lateral margins of ST2–5 (in contrast to *B. gaillardi*).

Male. Length: 10–12mm (n=4). Frons at vertex / head width ratio: 0.30–0.33 (mean 0.32, n=4). Males are recognisable by the shape of the ST5 flap in combination with (1) absence of ν spine-like setae or presence of very weak and very short such setae in a row on the proximal third of the fore tibia and (2) presence of a long and strongly curved distal finger of the distiphallus.

Anepimeron with pale setulae in lower half or more; a bundle of densely set black setulae dorsally. Fore tibia without or with extremely weak ventral spine-like setae in proximal half. Mid tibia with prolonged setae in distal third (Fig. 147). Hind tibia with a conspicuous but not very dense fringe of long thin setae on the lower two thirds or lower half of *av* and ν surfaces, not reaching the *pv* surface.

ST5 flap variable, outer and inner corners of the hind edge usually sharp; the posterior excavation varying from a shallow V (or nick), to a U, to an almost circular hollowing-out with a narrow opening (in holotype of *B. cuthbertsoni*). Hind edge of ST5 flap often oblique.

In distiphallus, the upper lip is a horizontal, as seen in lateral view, and semicircular, as seen in dorsal view, projection being very slightly concave below as seen from front. The distal finger clearly visible in lateral view of the distiphallus, not hidden from lateral view by the vertical sheet of sclerotisation passing between the upper lip and base of antler. Distal finger, in dorsal view, a rather long, conspicuously curved horizontal hook, with a deep concavity facing laterally, and with tip pointing at an angle of more than 45 degrees from the longitudinal axis of the distiphallus, its tip being situated outside a line drawn through the base of the distal finger parallel with the longitudinal axis of the distiphallus. Tip of distal finger separated from distal edge of upper lip by a distance about 0.25 of length of finger itself. Antler distally bifurcate (Fig. 159) with no toothed flange along the anterior side.

Female. Length: 12mm (n=2). Frons at vertex / head width ratio: 0.31–0.34 (mean 0.33, n=2). ST2 with a pair of strong marginal setae, a few weaker setae outside each seta in pair, usually no setae along lateral margin. Strong marginal pair of setae also on ST3 and ST4. In ovipositor T6 confined to sclerotised area around spiracles, marginal setae absent from membrane between T6 halves. T7 narrow sclerotised rods down on the sides of the ovipositor, marginal setae almost meeting in midline. T8 broader rectangular sclerites with marginal setae. ST6 of usual shape, undivided along midline. ST7 a large sclerite, broader than long, with an oval unsclerotised area in middle of front two thirds. ST8 with a very broad triangular basal part, and a vertical, circular distal part with strong setae in a kind of fan below the opening of the vagina. Epiproct and cerci elongate and curving dorsally as seen in lateral view and carrying erect and rather spinous “stiff” setae with thinner setae in between. Similar setae are present on the hypoproct. The cerci appear fused distally, and appear as a shining brown structure with a blunt tip in dorsal view. The ovipositor of *B. gaillardi* also has a strongly upturned spinous ovipositor tip, but in that species the ST2–5 are quite different. [1 female *B. tibiaria* dissected; all examined females have a similar ovipositor tip, easily inspected in dried specimens, cf. Fig. 172.]

Both females in NMSA that I have examined (a paratype female of *B. cuthbertsoni*, and a female from Namibia) have prominent marginals on ST2 like in *B. floccosa*. I have not dissected any of them. In the paratype the spinous setae on the upturned ovipositor tip are visible and shaped as in Figs. 168–172. In the latter the ovipositor is withdrawn deeply into the abdomen and the tip cannot be observed.

Note. It is possible that Villeneuve (1913a: 153) was actually the first to observe that there are two Afrotropical species where the female has a noteworthy ovipositor tip. After having described the very characteristic “armed” sternites of the female of *B. gaillardi*, Villeneuve adds: “Cette ♀ [i.e., the female of *B. gaillardi*], ..., porte en outre une petite tarière absolument pareille à celle d’une autre espèce africaine [my emphasis] si voisine d’aspect et de coloration que je dois la considérer comme *Bengalia depressa* Walk. ♀ ... Cette dernière montre des sternites III et IV du type étroit, elliptiques, non armés; elle est donc facile à distinguer [this ♀, ..., has a little sting absolutely similar to the one of another african species so close in aspect and coloration that I ought to consider it as *Bengalia depressa* Walk. ♀ ... This last one displays sternites III et IV of a narrow, elliptical, unarmed type; it is thus easy to distinguish].” This other species is not *B. depressa*, as he believed, but possibly *B. tibiaria*, described in 1926 on the basis of a single male only.



FIGURES 140–152. *Bengalia tibiaria* Villeneuve, male (140, 141, 150 from holotype of *B. tibiaria* in MRAC; 142–144 from specimen from Democratic Republic of Congo, Rutshuru, in MRAC; 145–149 from specimen from Namibia, Omaruru District, in ZMUC; 151–152 from holotype of *B. cuthbertsoni* in NMSA). **140.** Right hind tibia, anterodorsal view. **141.** Right hind tibia, dorsal view. **142.** Left fore tibia, posterior view. **143.** Right hind tibia, anterior view. **144.** Right hind tibia, dorsal view. **145.** Left fore tibia, posterior view. **146.** Right fore tibia, anterior, close-up view. **147.** Left mid tibia, posterior view. **148.** Left hind tibia, anterior view. **149.** Left hind tibia, posterodorsal view. **150.** Left anepimeron. **151.** Habitus. **152.** Labels (6).

Discussion. The figures of the antler of the distiphallus of *A. cuthbertsoni* and *A. tibiaria* by Lehrer (2005: 32 fig. 11C; 74 fig. 32C) are quite misleading for diagnostic purposes, especially the former figure, which bears no resemblance to the true antler.

I have examined all the material misidentified (consistently so) by Kurahashi & Kirk-Spriggs (2006) as *B. floccosa* (Namibia, Zambia and Zimbabwe). All male specimens lack the strong spine-like setae on fore tibia universally present in *B. floccosa*, and the tip of the distiphallus of all dissected specimens (by the authors or by myself) shows the characteristic features of *B. tibiaria*, e.g., the shape of distal finger, easily inspected in dorsal view of the distiphallus. All the females have an upturned somewhat elongate ovipositor tip bearing strong “stiff” spinous setae (Figs. 168–172), resembling the one in *B. gaillardi*, but the latter has quite different vestiture on ST2–5. The abdominal T3–5 are very dark in many specimens, as noted by the authors in key on p. 15, while others have a quite pale abdomen. Their figures 4 and 5 (on p. 17) of the ST5 flap are both representing extremes of the variation of its shape (cf. Figs. 163–165). Some specimens listed by Kurahashi & Kirk-Spriggs under “*B. gaillardi*” are also misidentified *B. tibiaria* specimens; for details see Material examined, under NMNW.

Biology. Capture dates for the material I have examined (including Kurahashi & Kirk-Spriggs’ material) are January–April, July, September–December. Lehrer’s material of *B. cuthbertsoni* (Lehrer 2005: 33) is from December and April. The capture date for the holotype of *B. tibiaria* given by Lehrer (2005: 75) as “fin IV 1911”, is erroneous and based on a misreading of a label (cf. Fig. 153).

Distribution. Botswana, *Democratic Republic of Congo, *Namibia, South Africa, *Zambia, *Zimbabwe.



FIGURE 153. *Bengalia tibiaria* Villeneuve, male (from holotype of *B. tibiaria* in MRAC). Labels (7).

Material examined. Type material. *Bengalia tibiaria* Villeneuve, 1926. This nominal species was described by Villeneuve (1926) on the basis of a single male specimen “reçu ... du Congo belge”. Unfortunately Villeneuve gave no further locality or label information about the specimen. Other species described in the same paper from “Congo Belge / belge” were from localities named “Albertville”, “Beni”, “Mayumbe”, “Beni à Lesse” and “Aberdare Mts”. There are two specimens in MRAC bearing determination labels in Villeneuve’s hand reading “*Bengalia / tibiaria / Typ. Villen.*” (Figs. 153, 154). The problem, then, is to decide beyond any doubt which of these two specimens is the holotype, i.e., the one before Villeneuve when he named *B. tibiaria* in his 1926 paper.

One specimen is labelled (Fig. 153) (1) HOLOTYPUS [black print on orange label, also with black frame]; (2) MUSÉE DU CONGO / Beni à Lesse / fin VII-1911 / Dr. Murtula [left hind leg glued to this label]; (3) *Bengalia / tibiaria / Typ. Villen.* [in Villeneuve’s handwriting]; (4) R. DÉT. / W / 2170 [printed, except for “W” which is handwritten]; (5) *Bengalia ♂ / gaillardi S.&G / det. Zumpt 60* [Zumpt’s handwritten label]; (6) *Bengalia ♂ / tibiaria Villeneuve, 1926 / HOLOTYPUS / Det. Dr. A.Z. LEHRER / VII.2004*; (7) RMCA ENT / 000012153 [printed with black and white QR Code]. It lacks all legs on left side, but mid and hind legs are present on right side.

The second specimen is labelled (Fig. 154) (1) Rutschuru / 20.IX.- 14 [handwritten]; (2) COLL. MUS. CONGO [printed] / Rutshuru / 20 – IX – 1914 (J. Bequaert) [handwritten]; (3) *Bengalia / tibiaria / Typ. Villen.* [in Villeneuve’s handwriting]; (4) *Bengalia ♂ / tibiaria Villeneuve, 1926 / Det. Dr. A.Z. LEHRER / VII.2004* [pink label, printed]; (5) KR’s determination label as *B. tibiaria* [printed]. It is staged and in fairly good condition. Both the Beni à Lesse and the Rutshuru specimens fit the description.

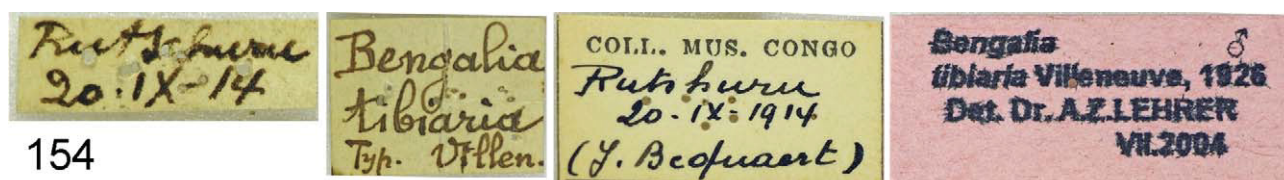


FIGURE 154. *Bengalia tibiaria* Villeneuve, male (from specimen from Democratic Republic of Congo, Rutshuru, in MRAC). Labels (4).

Zumt (1962b: 240) cited the Rutshuru specimen as the “only specimen known” of *B. tibiaria*. He had removed the cerci and surstyli and glued them to a card on the pin, but leaving the aedeagus unexamined inside the tip of the abdomen. He figured the ST5 flap (“apical plate”), which was left intact at the abdominal tip, and noted the absence of spine-like setae on the fore tibia (“the totally wanting basal comb of the foretibia”), both of which features he decided made *B. tibiaria* separate from *B. cuthbertsoni*. In the legends to his figures of the cerci and surstyli and the ST5 flap (Zumt 1962b: 242–243 figs. 5a, 5b) he stated that the Rutshuru specimen was the holotype. It is surprising that Zumt (1962b) treated the Rutshuru specimen as the only specimen known of *B. tibiaria*, since in 1960 he had attached his own determination label to the Beni à Lesse specimen, which was bearing an identical Villeneuve “*Bengalia tibiaria*” determination label. However, since Zumt considered (erroneously) the Beni à Lesse specimen to belong to another taxon, i.e., to *B. gaillardi*, there may have been, to him, only one *B. tibiaria* specimen, notwithstanding Villeneuve’s identical *B. tibiaria* determination labels on two specimens to the contrary.

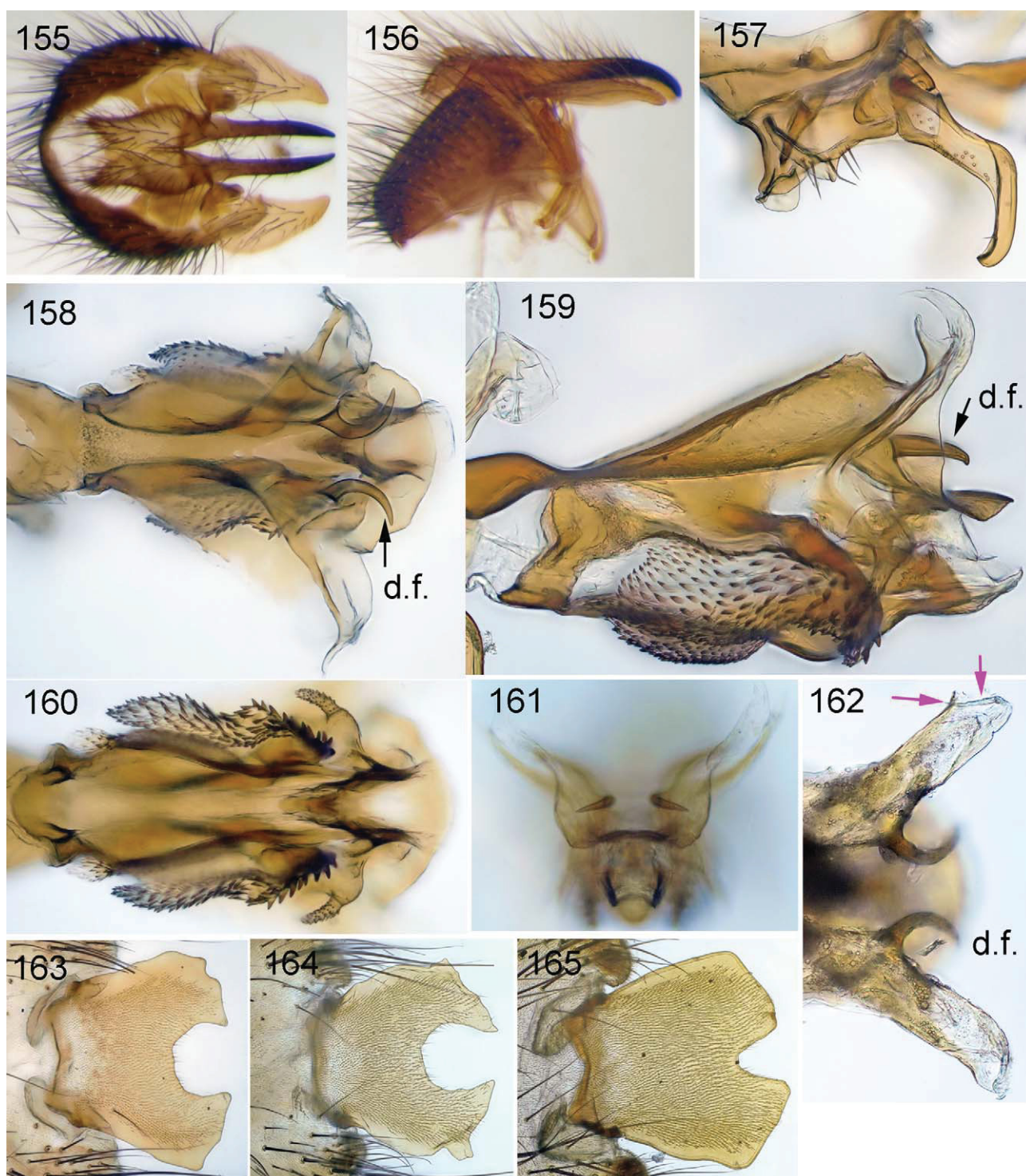
Zumt & Stimie (1965: 8) repeated the claim that only the Rutshuru specimen was known of *B. tibiaria*, before they reported that “Mr. D. M. Cookson has now succeeded in catching a second male at Mapembi, Rhodesia, 9.II.1964”. “Mapembi” is the present day Mapembe in Zimbabwe.

Lehrer (2005) examined both specimens, and considered the Beni à Lesse specimen as the holotype, in accordance with the attached holotype label. Not having seen Zumt’s (1962b) paper, at least to judge from his bibliography (Lehrer 2005: 186–187), he was apparently unaware of the problems created by Zumt’s assignment of the Rutshuru specimen as holotype.

The museum holotype label on the Beni à Lesse specimen has several pin holes, indicating it is an old label. In a document in MRAC named “Liste des types déposés dans les collections du MRAC”, there is an entry (under Diptera Calliphoridae) for *Bengalia tibiaria* Villeneuve, with a note reading “Ht ♂. (= T. ♂ unique sans localité)” [Ht = holotype; T. = type] in addition to a short bibliographic reference to the original paper (as “RZBA, 14, 1926, p.69”). However, the decisive clue to which specimen is the holotype resides in the label reading “R. DÉT / W / 2170”. The letters in the first label line refers to a “Registre Déterminations Entomologiques” in MRAC. In this register there is a handwritten entry line reading (in columns named from left to right “NUMÉRO”, “FAMILLE”, “NOM SPÉCIFIQUE”, “DÉTERMINATEUR, DATE, TYPE): “2170 W” “Diptera” “*Bengalia tibiaria* Vill.” “Villeneuve” “Type”. The entry is undated like several entries above and below it, but a previous entry (for “2170 A” with an identification done by Cockerell) on the same page is dated “XII-1932” and a succeeding entry (for “2181 S” with an identification done by Neyrick) is dated “I – 1933”. Thus the entry “2170 W” for the holotype of *B. tibiaria* was probably made late in 1932 or early 1933. Interestingly, the journal name was *Revue Zoologique Africaine* (published in Brussels) from 1911–1927 but changed to *Revue de zoologie et de botanique Africaines* (published in Tervuren, MRAC) in 1928, a name it kept until 1973. Thus the abbreviation “RZBA” is consistent with an entry for *B. tibiaria* in the “Liste des types déposés dans les collections du MRAC” (above) made after 1927, even though Villeneuve’s paper was published in the journal under its older name.

According to correspondence between Zumt and the staff of MRAC during the years 1955–1961, it is also evident that the existence and identity of the Rutshuru specimen of *B. tibiaria* only came to the knowledge of MRAC after Villeneuve’s death (*vide* letter from P.L.G. Benoit to F. Zumt dated 18 October 1955). Villeneuve died in 1944. Thus the Rutshuru specimen cannot ever have been considered to be the specimen that was entered as holotype some time in 1932–1933 into the MRAC registers cited above.

Zumt apparently was confused by the presence of two specimens with Villeneuve’s determination label and borrowed one or both a few times. After first having entered *B. tibiaria* as a questionable synonym of *B. depressa* (Zumt 1956: 164, 174) he ended up by (mis)identifying the Beni à Lesse specimen (the holotype) as *B. gaillardi* and the Rutshuru specimen as “a distinct species” (in letters to Benoit 26 April 1956, and to Basilewsky 3 January 1961).

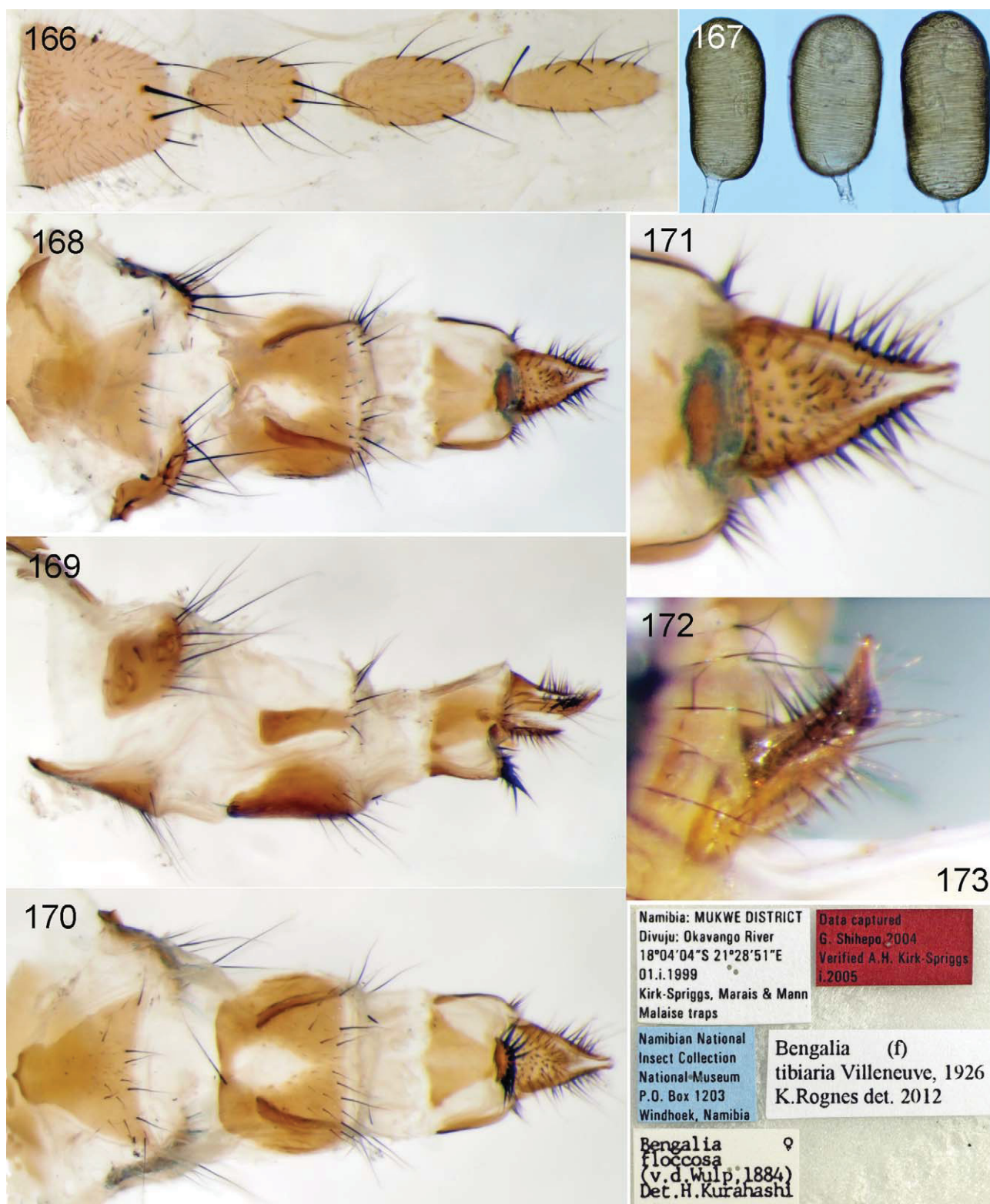


FIGURES 155–165. *Bengalia tibiaria* Villeneuve, male (155–161, 163 from specimen from Namibia, Omaruru District, in ZMUC; 162 from holotype of *B. tibiaria* in MRAC; 164 from holotype of *B. cuthbertsoni* in NMSA; 165 from specimen from Democratic Republic of Congo, Rutshuru, in MRAC). **155.** Cerci and surstyli, posterior view. **156.** Cerci and surstyli, lateral view. **157.** Pre- and postgonites, left. **158.** Distiphallus, dorsal view. **159.** Distiphallus, left lateral view. **160.** Distiphallus, ventral view. **161.** Distiphallus, apical view. **162.** Detail of distiphallus, dorsal view, showing distal fingers. Magenta arrows point to details of tip of antler, explained in text. **163.** ST5 flap. **164.** ST5 flap. **165.** ST5 flap. Abbreviations: *d.f.* = distal finger.

When I received the holotype from Beni à Lesse all legs on the left side were absent, except for the left hind leg which was glued to label no. 2. On the right side the mid and hind legs were present. Thus the specimen had no fore legs. It had been dissected and figured by Lehrer (2005). On the pin was a Lehrer-type big plastic genitalia vial, but all its contents had dried out. The original fluid appeared to have been absorbed by the inner end of the

stopper. The stopper was held in place securely but was removed without damage to the contents of the vial. The dried out genitalia were moved to a big hollow glass vessel and KOH was added. It was possible to ascertain that the aedeagus was identical to the one in *B. cuthbertsoni* because of the unique shape and size of the distal fingers (Fig. 162). The surstyli were also straight on the inner side, thus not = *B. gaillardi*. The left surstylus was covered by a clump of white matter, which, after a while in KOH, loosened from the rest of the hypopygium. The ST5 flap could not be found, even though it had been figured by Lehrer (2005: 74 fig. 32A) to be fairly similar to the one in Fig. 163. The holotype had earlier been identified as *B. gaillardi* by Zumpt 1960, according to an attached label (Fig. 153). This is an error since the hind tibia has only an *av* fringe, and the distiphallus is clearly the same as the one in *B. cuthbertsoni* Zumpt. The left antler tip (figured by Lehrer 2005: 74 fig. 32C) was at first covered with white matter (not revealing the distal bifurcation), but after 30 hours in KOH and a long stay in water it was possible to remove much of the white dirt. It turned out that the left antler tip was bifurcate, the bifurcation not being visible in lateral, but only in apical view. The right antler tip was intact and with a distal bifurcation, thus with a strong tine in addition to the distal tip, but the main tine was broken near its base (Fig. 162, magenta arrows). The Rutshuru specimen, when I received it from MRAC, was in good condition, and all legs were intact. It had the cerci and surstyli removed from the dried abdomen and glued to a piece of card by Zumpt. The aedeagus remained inside the abdomen. The ST5 flap was intact *in situ*. Both the very characteristic ST5 flap, and the cerci and surstyli were illustrated by Zumpt (1962: 242–243 figs. 5a, 5b). Lehrer (2005) did not dissect the abdomen. I have now dissected it, and the aedeagus is identical with the one in the holotypes of both *B. tibiaria* and *B. cuthbertsoni*, also with distally bifurcate antlers. The ST5 flap was rather aberrant (Fig. 165) with only a small V-like incision in the hind margin. The dried T1–5 are now glued to a card and the ST1–5 and genitalia are in glycerol in a glass microvial on the pin.

Bengalia cuthbertsoni Zumpt, 1956. *Bengalia cuthbertsoni* was described by Zumpt on the basis of 6 males and 1 female from Balla-Balla in Zimbabwe. The syntypic material was captured in December 1932 and in January and March 1933. I have seen the holotype and a male and female paratype, all in excellent condition, in addition to a microscope slide made of the genitalia of the male paratype examined. **Holotype** male, in NMSA, labelled (1) Balla-Balla / S. Rhodesia / 29.XII.1932 / A. Cuthbertson [printed on yellowish label, except day and month which are handwritten in pencil; the year is printed as “1931” but the last digit is overwritten in pencil with the digit “2”; above last line is a stippled line across label; on each side of label is a black line]; (2) On path; preys / on ♀ Termites / on old cowdung [handwritten in pencil on red label]; (3) HOLOTYPUS [printed on red label]; (4) *Bengalia* ♂ / *cuthbertsoni* n. sp. / det. Zumpt 55 [handwritten by Zumpt]; (5) NMSA-DIP / 17837 [printed; text facing down]; (6) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (7) Dissected / 23.vi.2011 by / K. Rognes [handwritten except for printed last line]. Note. The dried abdominal tergites T1–5 are glued to a card above the labels. The dissected genitalia are in glycerol in a glass microvial on the pin above label no. 7. **Paratypes. NMSA: Zimbabwe:** [1 male and 1 female]: 1 male labelled (1) Balla-Balla / S. Rhodesia / 9 Jan. 1933 / A. Cuthbertson [printed on yellowish label, except day and month which are handwritten in pencil; the year is printed as “1931” but the last digit is overwritten in pencil with the digit “3”; above last line is a stippled line across label; on each side of label is a black line]; (2) slide 5 [handwritten by Zumpt]; (3) PARATYPE [printed]; (4) *Bengalia* ♀ / *cuthbertsoni* n.sp. / det. Zumpt 55 [handwritten by Zumpt]; (5) NMSA-DIP / 17839 [printed; text facing down]; (6) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]. Note. The specimen has had the genitalia removed, but the ST5 flap is clearly visible. It is shaped as the one in the holotype, thus with an excavation tending to be almost circular, and with a distal “opening” narrower than the deeper part of the excavation. The genitalia have been mounted in Canada balsam on slide no. 5 in NMSA (examined). It is labelled (upper label) *Bengalia* / *cuthbertsoni* / Zpt. n.sp.; (lower label) Balla Balla / S. Rhodesia / 9.I.1933 [all text handwritten in Zumpt’s hand]. Under the circular coverglass are the cerci, surstyli and epandrium as a squashed flat unit, and the aedeagus and gonites flattened in left side view. The curved distal fingers and the bifid antlers are clearly visible. • 1 female labelled (1) Balla-Balla / S. Rhodesia / 20.XII.1932 / A. Cuthbertson [printed on yellowish label, except day and month which are handwritten in pencil; the year is printed as “1931” but the last digit is overwritten in pencil with the digit “2”; above last line is a stippled line across label; on each side of label is a black line]; (2) 737 [handwritten]; (3) PARATYPE [printed]; (4) *Bengalia* ♀ / *cuthbertsoni* n.sp. / det. Zumpt 55 [handwritten by Zumpt]; (5) NMSA-DIP / 17838 [printed; text facing down]; (6) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]. Tip of ovipositor visible, with “stiff” setae.



FIGURES 166–173. *Bengalia tibiaria* Villeneuve, female (166–171, 173 from dissected specimen from Namibia, Mukwe District, in NMNW; 172 from dried specimen from Namibia, Rundu District, Katara, Okavanga R., in NMNW). **166.** ST2–5. **167.** Spermathecae. **168.** Ovipositor, dorsal view. **169.** Ovipositor, left lateral view. **170.** Ovipositor, ventral view. **171.** Tip of ovipositor, dorsal view. **172.** Epiproct, cerci and hypoproct, left lateral view. The white structure in lower part of figure is a protruding egg. **173.** Labels on dissected specimen (5).

Other material. NMNW: **Namibia** [81 males, 60 females], **Zambia** [1 female from 5 km S Choma], **Zimbabwe** [7 males and 6 females, all from Vomba Mountain]. I have examined all material listed by Kurahashi &

Kirk-Spriggs (2006) under *B. cuthbertsoni* (p. 60, 109; correctly identified) and under *B. floccosa* (p. 61, 109; all misidentified). All belong to *B. tibiaria*. Among those listed under *B. gaillardi* (p. 61–62) 1 male from Salambala forest (dissected by Kurahashi), 1 male from Hamoye Nat. Forest, 4 males and 4 females from Nama, and 1 male from 10km W of Dussi are also *B. tibiaria*, as evidenced by the lack of spinous setae on the ventral side of the fore tibia in the males, the elongate oval and “unarmed” ST2–4 and the spinous and curved ovipositor tip of the females. I will not repeat the details of these records, but refer to the lists by Kurahashi & Krik-Spriggs (2006). Several specimens had been dissected by Kurahashi when I received the material, and I have dissected some additional specimens. I have given all specimens my identification label. Two females, left as “*Bengalia* sp. nr. *cuthbertsoni*” by Kurahashi & Kirk-Spriggs (2006: 61), are not included in the above numbers. The one from Mahanene Research station is very pale and has the ovipositor fully extended. The vestiture on the ovipositor tip is white and structurally different from the one usually observed in *B. tibiaria* females, but the ovipositor sclerites correspond with those on Figs. 168–170. In the specimen from Kubunyana camp, the tip of the ovipositor cannot be observed, and I have not dissected it. The ST2–5 of both females are of the simple oval “unarmed” types, so *B. peuhi* and *B. gaillardi* can be excluded. Similarly, the distance between the medial marginal setae of T4 and the presence of both black and pale setulae on the anepimeron preclude any species of the *B. spinifemorata* species-group. This leaves their identity most likely as *B. tibiaria*. **NMSA: Namibia** [3 males and 1 female]: 1 male labelled (1) SOUTH WEST AFRICA 2115Bd / Omaruru Dist. 25 km. N.W. / Omaruru, 1200m. 5-II-1974 / ME Irwin dry wash in / *Acacia* covered plain [printed]; (2) ♂ [printed]; (3) *Bengalia* ♂ / *cuthbertsoni* Zpt. / det. Zumpt 79 [handwritten]; (4) NMSA-DIP / 17841; (5) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label] (6) KR’s determination label as *B. tibiaria*. The genitalia have been removed and the epandrial complex is glued to a card above the labels. The dried aedeagus is visible, but the extreme tip of the distiphallus is broken off, one antler visible. The ST5 flap is *in situ*. It has a U-shaped opening, with no constriction at the hind end. • 1 male labelled (1) SOUTH WEST AFRICA 2115Bd / Omaruru Dist. 25 km. N.W. / Omaruru, 1200m. 5-II-1974 / ME Irwin dry wash in / *Acacia* covered plain [printed]; (2) *Bengalia* ♂ / *cuthbertsoni* Zpt. / det. Zumpt 79 [handwritten]; (3) NMSA-DIP / 57893; (5) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label] (6) KR’s determination label as *B. tibiaria*. The genitalia have been removed and the epandrial complex is glued to a card above the labels. The dried aedeagus is broken near base. The ST5 flap is *in situ*. It has a U-shaped opening, with no constriction at the hind end of the excavation. • 1 male labelled (1) SOUTH WEST AFRICA 2115Bd / Omaruru Dist. 25 km. N.W. / Omaruru, 1200m. 5-II-1974 / ME Irwin dry wash in / *Acacia* covered plain [printed]; (2) ♂ [printed]; (3) *Bengalia* ♂ / *cuthbertsoni* Zpt. / det. Zumpt 79 [handwritten]; (4) NMSA-DIP / 57894; (5) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (6) distal finger / visible [pencil script by KR]; (7) KR’s determination label as *B. tibiaria*. The genitalia have been removed and the epandrial complex is glued to a card above the labels. The dried aedeagus is visible and complete. Distal fingers, upper lip, antlers are all clearly visible. The ST5 flap is *in situ*. It has a U-shaped opening, with no constriction at the hind end. • 1 female labelled (1) SOUTH WEST AFRICA 2116Ca / Omaruru Dist. 20 km. S.E. / Omaruru, 1580m. 4-II-1974 / ME Irwin sandy plain with / *Acacia* trees [printed]; (2) ♀ [printed]; (3) *Bengalia* ♀ / *cuthbertsoni* Zpt. / det. Zumpt 79 [handwritten]; (4) NMSA-DIP / 17842; (5) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (6) KR’s determination label as *B. tibiaria*. Tip of ovipositor not visible. **ZMUC: Namibia**: 1 male labelled (1) SOUTH WEST AFRICA 2116Ca / Omaruru Dist. 20km. S.E. / Omaruru, 1580m. 4-II-1974 / L. Lyneborg, sandy plain / with *Acacia* trees [printed]. Dissected by KR.

Species incertae sedis

Under this heading three Afrotropical species are treated which cannot be assigned to the *B. peuhi* or *B. floccosa* subgroups of the *B. peuhi* species-group because of the lack of *pd* setae on the hind tibia and the lack of a distal finger in the distiphallus. In *B. africanoides* **sp. nov.** one of the discal setae on T5 is weak. In *B. aliena* the lack of T5 discals seems to be quite constant, although I have seen a female *B. aliena* with only a single weak discal seta on T5. I assign both these species to the *B. peuhi* group because of the morphology of the distiphallus, despite the absence or presence of weak T5 discals. T5 discal setae are regularly absent in the Oriental *B. labiata* and *B. torosa* species-groups, but the species belonging to these groups have an aedeagus morphology very different from the one in the *B. peuhi* species-group. The systematic position of the third species, *B. wyatti*, is more problematical. It

shares a number of features with the *B. spinifemorata* species-group (anepimeron with mostly yellow setulae, T4 median marginals very close together, fore femur with strong *pv* spinous setae, fore tibia with a row of strong setae on proximal half of ventral surface, no fringe of long thin more or less densely set setae on the *av* and *v* surfaces of the hind tibia, a complex surstylus), but it has a distiphallus like all *B. peuhi* group members, i.e., there is an antler with a basal tooth, a projecting upper lip, a small lateral finger, an outer hypophallic lobe with its broadest aspect directed laterally, a large opening of the ejaculatory duct at level with the upper lip, and large dorsolateral wings. For this reason I assign it to the *B. peuhi* species-group.

8. *Bengalia africanoides* sp. nov.

Figs. 174–192.

Etymology. The specific name “*africanoides*” is derived from the stem of “*africana*” with the addition of the Latin suffix “-oides” (meaning like, resembling, in the form of) referring to my immediate (and erroneous) belief that it was the male counterpart of *B. africana*, based on the female holotype, and the similarity of the two species with respect to the presence of almost only black setulae on the anepimeron.

Diagnosis. *Male.* Length: 11mm (n=1). Frons at vertex / head width ratio: 0.28 (n=1). The species is recognisable in the male sex by the unique shape and the small size of the ST5 flap in combination with the presence of only 3 *post dc*, a unique feature among *Bengalia* species (cf. Zumpt 1956, Lehrer 2005), the absence of a distal finger in the distiphallus and the absence of a projecting process on the upper bacilliform sclerite.

Anepimeron with mostly black setulae. Fore tibia without strong ventral setae in proximal half; a *pv* fringe present on distal half. Mid tibia with an *av*, *v*, and *pv* fringe on more than distal half. Hind tibia with an *av*, *v* and *pv* fringe of long and densely set setae on distal four fifths. No spine-like setae on the fore or other femora. T4 with medial marginal setae widely separated. T5 with one strong and one weak discal seta (Fig. 190).

The ST5 flap broader than long with two lateral convexities with a slight medial depression between them; densely clothed with microtrichiae over entire surface.

Cerci bent slightly backwards in distal half. Cercal prongs not very strong and widely separated from each other. Surstylus broad, outer edge semicircular, the inner edge weakly concave. Bacilliform sclerite without projecting process.

Distiphallus with rather low dorsolateral wings and short bifurcate weakly sclerotised antlers. No distal finger present. In dorsal view upper lip distally slightly convex, strongly concave on underside seen from front. Lateral finger relatively thick, curved, projecting outwards and backwards well beyond outer edge of external hypophallic lobe in dorsal or ventral view. External hypophallic lobe slightly folded distally. Internal hypophallic lobes parallel. Ventral finger rounded in lateral view.

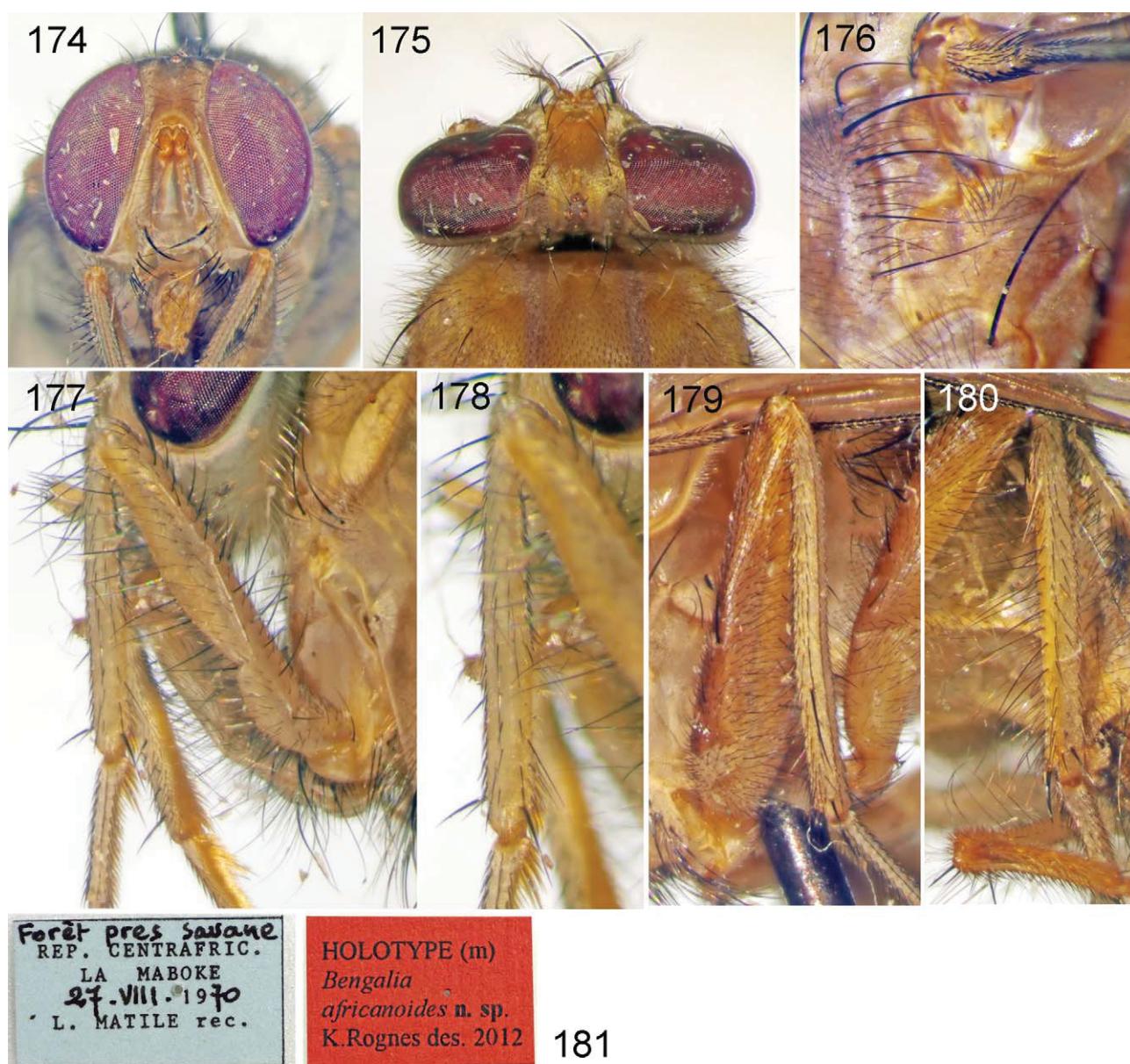
Female. Unknown, but if the number of 3 *post dc* in the male is a constant property, the female should be easily recognisable on that feature.

Description. Measurements. See Diagnosis above.

Male. Head. Yellow ground colour, with golden microtomentum. Anterior two thirds of frontal vitta honey-yellow without much microtomentum. Slightly darkened areas according to angle of light on each side of lunula, and on each side of vertex around and behind each reclinate prevertical seta. 6–7 frontal setae on each side. Fronto-orbital plate narrow, with a single row of black setulae, without proclinate orbital setae. The posteriormost setula on left side strongest, and almost half as long as the posteriormost frontal seta. Lunula bare. Frontal vitta with numerous short, very slender black setulae. Frons slightly constricted at level of lunula, giving it the appearance of narrowing somewhat from vertex to lunula (possibly due to the slightly teneral state of the specimen). Parafacial narrow, with a single row of small black setulae. Vibrissal corner with 6 very short setae lateral to base of vibrissa. Vibrissa situated a little above the lower facial margin in profile view, latter not projecting. Occiput and gena with long pale setulae, with a few interspersed black setulae on genal dilation. Palpus with three short apical setae, three long seta below on distal half. A group of three very long setae on a sclerite near the base of the palpus. First flagellomere dark on outside, yellow medially, except along fore edge.

Thorax. Brownish yellow dorsally, with two darker vittae just inside of the row of dorsocentral setae beginning far forward on the prescutum and ending slightly in front of the second *post dc*. Another dark vitta, much shorter, is present more laterally. It ends posteriorly midway between the *post ia* seta and the second *post dc* seta

and ends anteriorly at the level of the first *post dc*. Ground setulae black all over. 0 + 1 *acr* (just in front of scutellum, deep down in the hole made by the pin); 1 + 3 *dc* (on both sides of thorax; the *prst dc* close to suture; the three *post dc* placed at regular intervals, becoming stronger posteriorly, foremost *post dc* stronger than in species with 4 *post dc*); 0 + 1 *ia*; 3 *sa* (hindmost very weak); 2 *pa*; 1 *prst*; 1 *ph* (the inner); 2 *h*; 2 *npl*; 1 strong seta (*dc*?) very far forward on prescutum just inside the anteromedial corner of the humeral callus; 3 scutellar marginals, a weak discal pair close to apical scutellars. Pleura yellow with irregular darkening according to angle of view. Numerous black setulae around bases of the single proepisternal and single proepimeral setae. Proepisternal depression (prosternum) bare. Anterior and posterior thoracic spiracles yellow. 5–6 strong marginal anepisternal setae accompanied by densely set and rather long black ground setulae both between them and behind them. Remainder of anepisternum covered with black ground setulae in posterior and upper part. Anepimeron with almost all ground setulae on posterior half black, a few of them invading anterior half of anepimeron. Katepisternum with black ground vestiture all over; 1+1 *kepst*. Meron with 5–6 strong black setae with 1–2 shorter ones between. Extreme lower part of meron and all of metakatepisternum with pale ground setulae. No coxopleural streak. Anatergite with a group of black setulae below lower calypter. Katatergite bare. Postalar wall with black setulae. Prosternum with pale ground setulae.



FIGURES 174–181. *Bengalia africanoides* sp. nov., male (all from holotype from Central African Republic in MNHN). 174. Head, anterior view. 175. Head, dorsal view. 176. Left anepimeron. 177. Left fore leg, posterior view. 178. Left fore tibia, posterior view. 179. Left mid tibia, anterodorsal view. 180. Left hind tibia, anterior view. 181. Labels (2).

Wing. Tegula, basicosta and subcostal sclerite yellow; wing veins all yellow; costa hairy below to slightly beyond junction with R_1 only, thus second costal sector setulose below, but most of the remainder of the costa bare below; R_{4+5} setulose on the upper side of wing from node halfway to $r-m$ crossvein. Lower calypter with inner margin converging with long axis of fly, more than twice as long as upper. Both calypters with white fringe hairs, except at the junction of upper and lower calypter where they are brownish. Halter yellow.

Legs. All parts yellow, except distal tarsomere on mid leg, and two distal tarsomeres on hind leg which are definitely brownish. Fore tibia without strong ventral setae in proximal half; with three weak *ad* setae, lowermost about as long as the diameter of tibia, the two upper ones much shorter; 1 *pv* seta at about lower 2/5, lost on left side (socket visible); distinct fringe on lower half of fore tibia, consisting of long slender setae, longest longer than the *pv* seta; *ad*, *d*, and *pv* preapical setae in increasing size. Fore femur without *pv* spine-like setae. Mid tibia with 1 *ad*, 2 *p* and 1 long and slender *pv* seta at same level as lowermost *p* seta; an *av*, *v*, and *pv* fringe on more than distal half. Mid femur with 2 *a* at middle; no *a* preapicals; a short *pv* preapical ctenidium consisting of 5–6 short setae; 5–6 long *pv* setae at middle. Hind tibia with 1 *ad* (lost on left side) at middle of tibia; no *av* seta at lower fifth among the fringe setae (likely to be an aberration, sometimes encountered also among other species); no *pd* setae; an *av*, *v* and *pv* fringe of very long and densely set setae on distal four fifths. Hind femur with an *ad* row of 5–6 strong setae; an *av* row of 10–12 very weak and slender setae.

Abdomen. Tergites and sternites yellow, with greyish-white microtomentum in shifting pattern; marginal dark bands on all segments, about one quarter of tergite length; TST7+8 and epandrium brown. T1+2 with a bundle of 5–6 discal marginals; T3 with 4–5 weak lateral marginals; T4 with 3–4 lateral marginals on each side and a pair of widely separate medial marginals (Fig. 190). T5 with one strong and one weak median discal seta (Fig. 190). ST1–5 with pale ground vestiture with some black setulae especially along margins. ST5 flap yellowish-white under the stereomicroscope.

Male genitalia. See under Diagnosis, above.

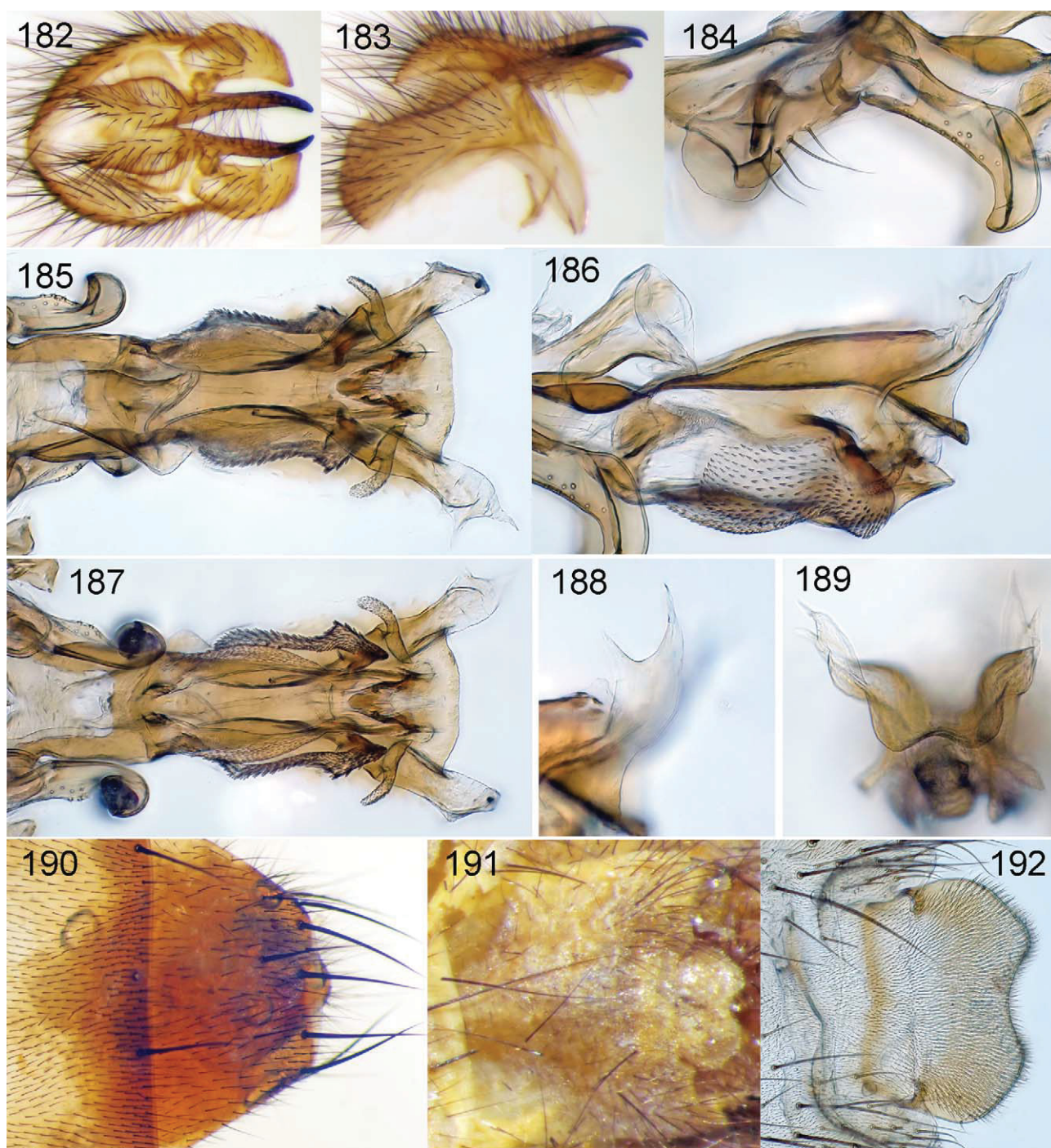
Female. Unknown, but if the number of 3 *post dc* in the male is constant, the female should be recognisable by that feature.

Discussion. I first thought that the holotype of *B. africanoides*, since not referable to any known *Bengalia* male, was the male of *B. africana* Malloch, known only from the holotype female from Kenya. With that nominal species it shared the presence of only black setulae on the anepimeron. However, an anepimeron with only or almost only black setulae is also present in *B. roubaudi* and *B. depressa*; so, for the sake of this argument, *B. africana* might equally well be the unknown female of one of these species. The presence of 3 *post dc* is interesting and important. All other *Bengalia*, as far as I am aware, have 4 *post dc* arranged as two smaller ones in front, the third much stronger, the prescutellar *dc* very strong. In *B. africanoides* the three *post dc* are placed at regular intervals indicating that this is their normal distribution, and not positioned as if one of the usual 4 *post dc* in *Bengalia* has failed to develop. In addition, the first *post dc* is stronger than the first usually is when 4 *post dc* are present. This feature, together with the morphology of the distiphallus, strongly suggest that the holotype represents a new species, and rule out the possibility that it is the male counterpart of the female holotype of *B. africana*. Note that I have argued for separate reasons that *B. africana* is a junior synonym of *B. depressa* (see above under that species).

Biology. Unknown.

Distribution. *Central African Republic.

Material examined. Type material. **Holotype** male, in MNHN, labelled (1) Forêt pres savane / REP. CENTRAFRIC. / LA MABOKE / 27.VIII.1970 / L. Matile rec. [printed on blue label, line 1 is handwritten, line 4 handwritten except the digits 19]; (2) HOLOTYPE (m) / *Bengalia* / *africanoides* n. sp. / K. Rognes des. 2012 [printed on red label] (Fig. 181). Dissected by KR. Abdominal tergites T4 and T5 glued to card on pin, ST4–5 and genitalia in glycerol in vial on pin between labels. The specimen is somewhat teneral, which is revealed by somewhat flattened femora, flattened abdomen with very fragile, not fully sclerotised abdominal tergites. For dissection I tried as usual to break the junction between the anterior end of the abdomen and the thorax by pressing the tip of a fine forceps gently against the hind part of the abdomen from below, but during the attempt the abdomen broke instead at the level of segment 3, which was partly destroyed in the process. The abdominal segments 1 and 2 are *in situ*. The anterior portion of the hypandrium and the distal part of the ejaculatory sclerite are not fully developed, but the other genital parts are well formed, although not heavily sclerotised.



FIGURES 182–192. *Bengalia africanoides* sp. nov., male (all from holotype from Central African Republic in MNHN). **182.** Cerci and surstyli, posterior view. **183.** Cerci and surstyli, lateral view. **184.** Pre- and postgonites, left. **185.** Distiphallus, dorsal view. **186.** Distiphallus, left lateral view. **187.** Distiphallus, ventral view. **188.** Detail of right antler, left lateral view. **189.** Distiphallus, apical view. **190.** T4 and T5, in glycerol, showing discal setae on T5 (left one weak, just below air bubble). **191.** ST5 and ST5 flap. **192.** ST5 flap.

9. *Bengalia aliena* Malloch, 1927

Figs. 193–216.

Bengalia (*Ochromyia*) *aliena* Malloch, 1927: 407. Holotype female (MNHN, examined), by original designation. Type locality: Gabon (N'Djolé).

Note. Malloch's statements "[t]he only data upon the specimen is a written label ..." ... "Type in Paris Museum" show that

he described the species on the basis of a single specimen. By employing the term “Type” he fixed the holotype by original designation (Article 73.1.1 of ICZN 1999). There is only one specimen under *Bengalia aliena* in MNHN.

Bengalia aliena: Zumpt 1956: 167. Democratic Republic of Congo (4 females from Bambesa, Libenge, Ubangi), Liberia (1 female from Robertsport).

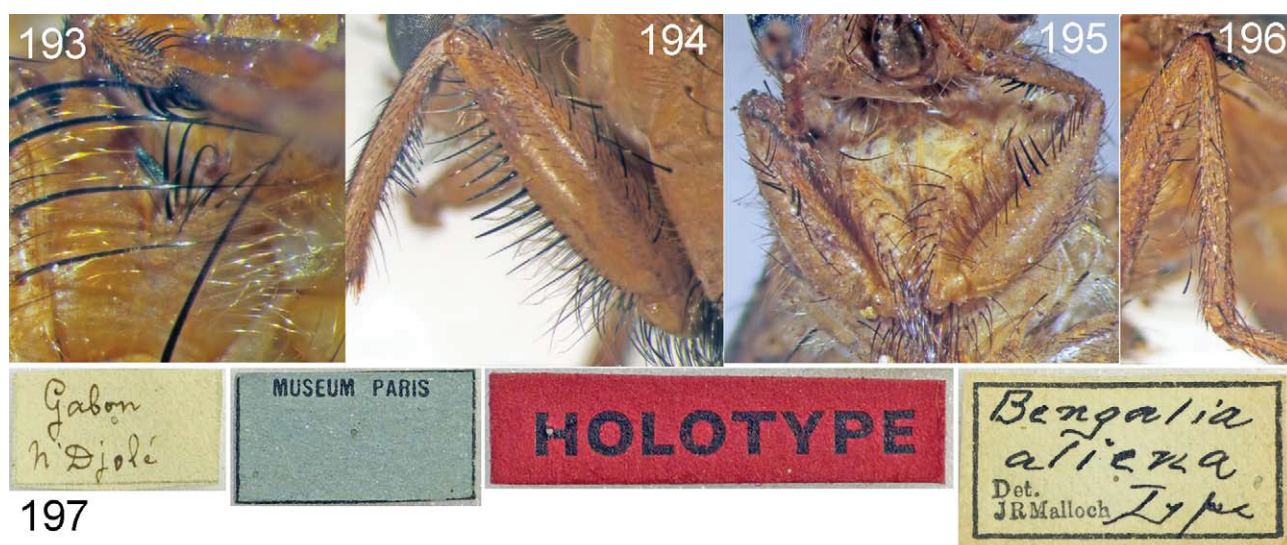
Bengalia aliena: Zumpt 1962b: 240, figs. 4a–c. Nigeria (Lagos).

Note. Zumpt here described the male for the first time on the basis of a specimen from Nigeria, and illustrated the ST5 flap, cerci and surstyli and the aedeagus in lateral view.

Bengalia aliena: Pont 1980: 791. Catalogue entry.

Tsunamia yorubana Lehrer, 2005: 84. Holotype male (BMNH, not examined), by original designation. Type locality: Nigeria (Jericho, Ibadan). **Syn. nov.**

Note. Lehrer gave figures of the male genitalia, but it is unclear why he decided to redescribe this striking taxon under a new name. Both the specimens he examined (the holotype and paratype males, both from Nigeria) had already been identified as *B. aliena* by van Emden and Crosskey, respectively. Possibly, he may not have been aware of Zumpt’s (1962b) paper where Zumpt described the male sex; at least this work is absent from Lehrer’s bibliography. Whatever the case, Lehrer gives no arguments for why he is not accepting Zumpt’s association of the male with the female holotype in MNHN.



FIGURES 193–197. *Bengalia aliena* Malloch, male and female (193, 194 from male specimen from Ashanti, NMSA-DIP 17836, in NMSA; 195, 196 from male specimen from Ivory Coast in MNHN; 197 from female holotype in MNHN). **193.** Left anepimeron. **194.** Left fore femur and tibia, posterior view. **195.** Both fore femora showing long densely set anterior and anteroventral setae. **196.** Left hind tibia, anterior view. **197.** Labels (4).

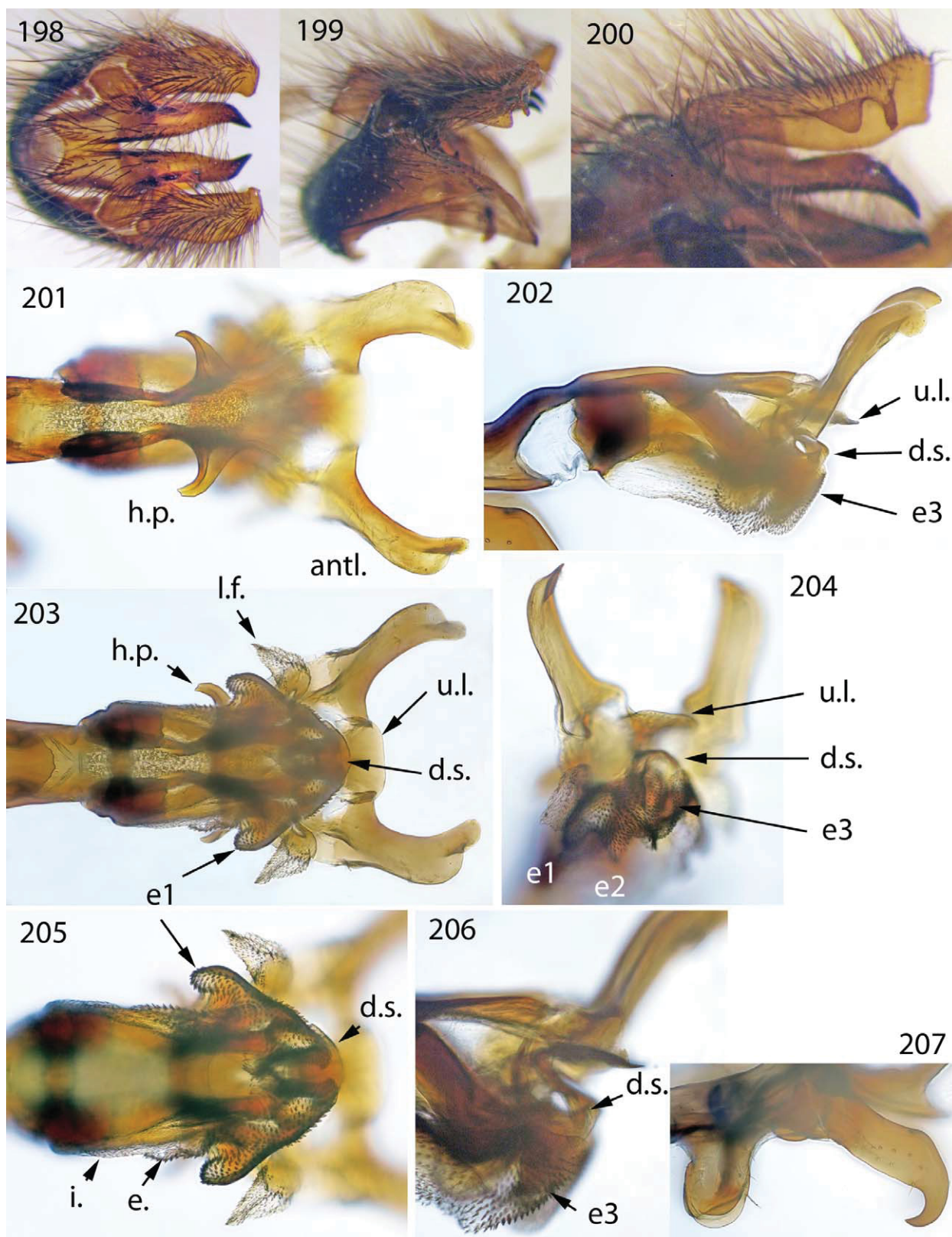
Diagnosis. Male. Length: 12–15mm (n=2). Frons at vertex / head width ratio: 0.29–0.29 (mean 0.29, n=2). Recognisable in both sexes on the regular absence of discal setae on T5.

Anepimeron with a group about 3–7 black rather short setae near upper margin, usually quite strong and curved at tip (thicker at base than meral setae, but thinner at base than anepisternal setae, only half as long as meral setae), other setulae below this group yellow. Fore tibia with a regular row of strong spines in proximal half, lowermost spine strongest and about as long as width of tibia, those above becoming gradually shorter, fringe of long slender setae in lower third. Fore femur with 4–5 pv spinous setae and long, slender and densely set setae on *a* and *av* surfaces. Hind tibia with weak fringe of 2–3 long and several weaker setae in distal half.

T5 usually without a pair of discal setae.

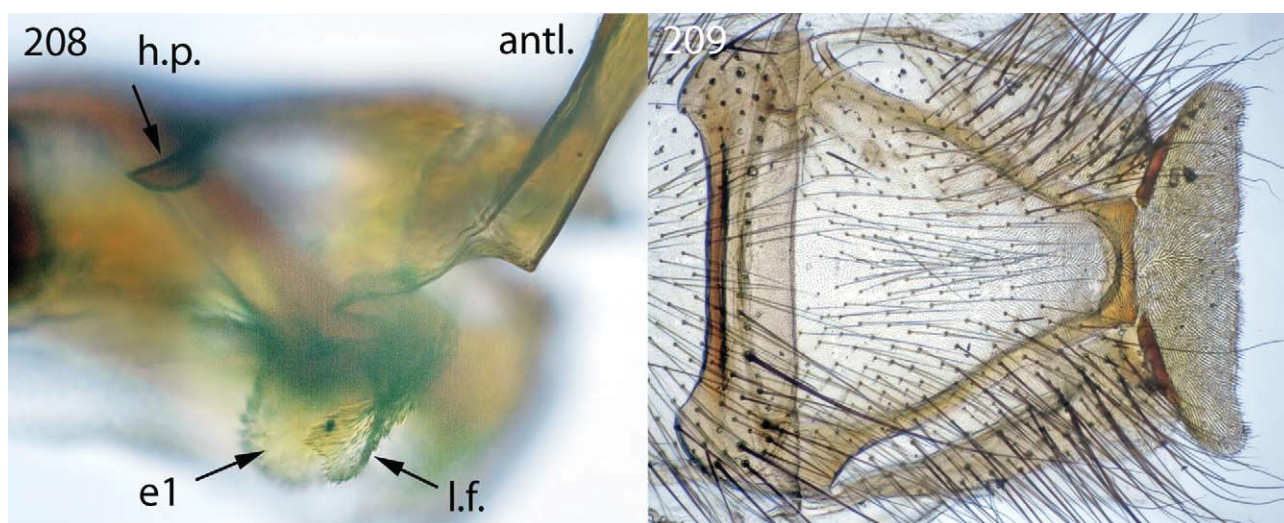
ST5 flap in male a very short and broad “crossbar”.

Distiphallus with antlers and upper lip. The dorsolateral wing is reduced to a narrow laterally directed horizontal process (*h.p.*) middorsally on each side. The upper lip (*u.l.*) is narrow and flat. The antlers are rather long, distally with two lobes. The lateral finger (*l.f.*) (Figs. 203, 205, 208) is a broad, flat, triangular and pointed structure. Internal hypophallic lobes (*i.*) clearly separable from the external hypophallic lobes (Fig. 205 *i.* and *e.*). The distal part of the external hypophallic lobe with three distal folds, posterior (*e1*), middle (*e2*) and apical (*e3*) folds, each with numerous denticles. The apical folds (*e3*) almost meet in the midline at the apex of the distiphallus and are flanking the opening of the ejaculatory duct at the sides. Above and on the sides of the ejaculatory opening is the dorsal shield (*d.s.*), a roof-like curved unpaired structure.



FIGURES 198–207. *Bengalia aliena* Malloch, male (all from specimen from Ivory Coast in MNHN). **198.** Cerci and surstyli, posterior view. **199.** Cerci and surstyli, lateral view. **200.** Cerci and surstyli, oblique ventrolateral view. **201.** Distiphallus, dorsal view (focus on horizontal processes of dorsal wall). **202.** Distiphallus, left lateral view. **203.** Distiphallus, ventral view. **204.** Distiphallus, slightly oblique apical view. **205.** Distiphallus, ventral close-up view. **206.** Details of apical part of distiphallus, lateral close-up view. **207.** Pre- and postgonites. Abbreviations: *antl.* = antler; *d.s.* = dorsal shield; *e.* = external hypophallic lobe; *e1*, *e2*, *e3* = proximal, middle and distal projections of distal part of external hypophallic lobe; *h.p.* = horizontal process; *i.* = internal hypophallic lobe; *l.f.* = lateral finger; *u.l.* = upper lip.

Female. Length: 11–15mm (n=4). Frons at vertex / head width ratio: 0.29–0.29 (mean 0.29, n=5). All females I have seen, like the males, lack discal setae on T5, except for a female specimen from Gabon in MNHN which has a single weak discal seta on T5 (the right one). ST2–5 each with a pair of rather strong marginals; on ST5 they are rather wide apart. Ovipositor sclerites short. T6 a large sclerite, confined on each side to area around the two spiracles. T6 with marginal setae, but no marginal setae invading the area between the T6 sclerotisations. T7 short, broad and paired sclerites with 2–3 marginal setae on each side. The distance between the sclerites less than the width of each sclerite. No marginal setae invading area between the T7 sclerotisations. T8 short triangular paired pieces with a few marginals. ST6 a large undivided half-moon shaped sclerite with marginal setae. ST7 also entire, longer than ST6 and encloses the entire ventral and lateral sides of the ovipositor. ST7 with marginal setae along the entire hind edge, but setae longest laterally. ST8 entire, with a very short proximal part, and a longer vertical part with a few setae which border the opening of the vagina. Epiproct, cerci and hypoproct with long thin marginal setae. Spermathecae elongate. Uterus with two small proximal sclerotisations of unknown significance. [1 ovipositor dissected.]



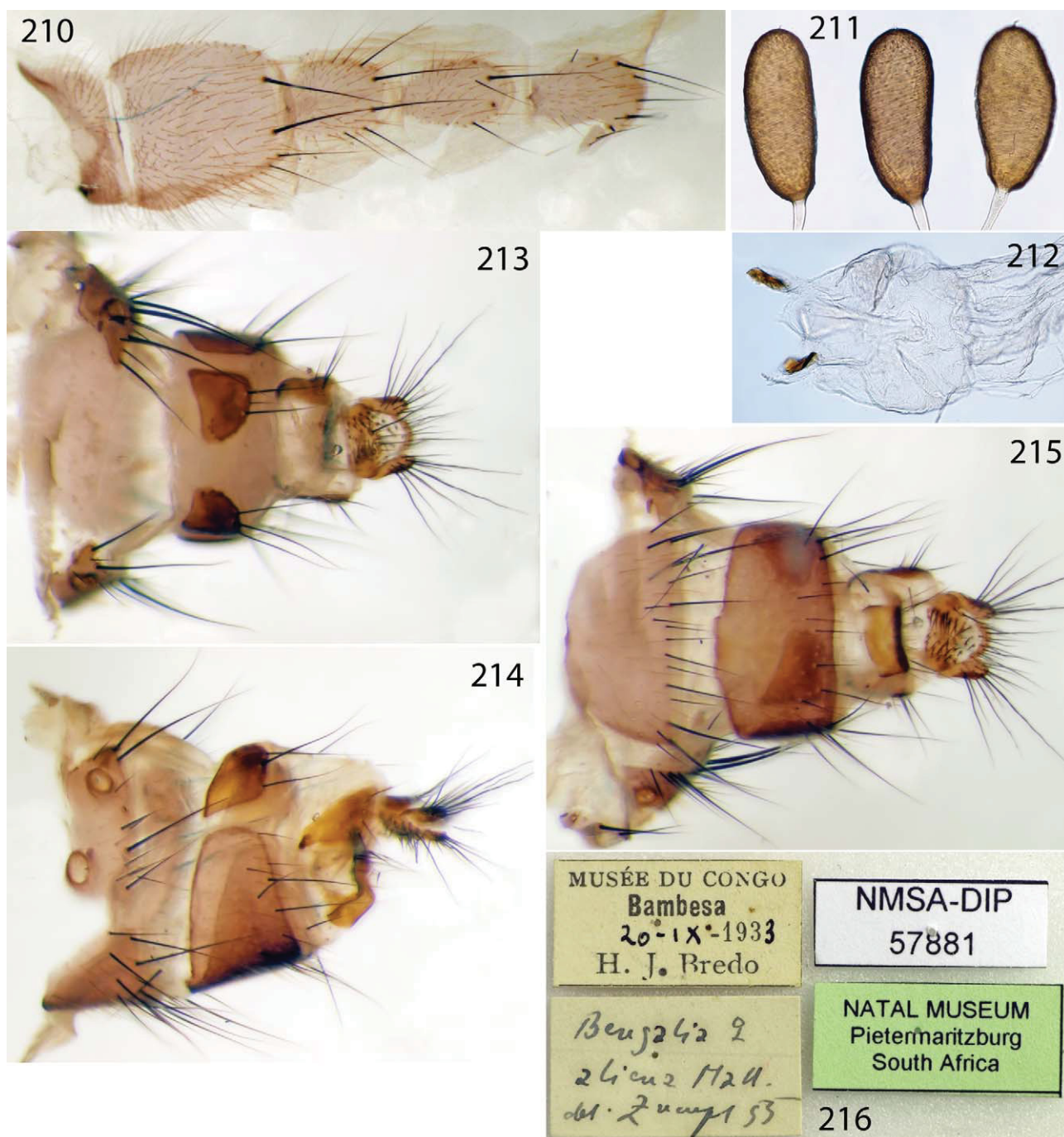
FIGURES 208, 209. *Bengalia aliena* Malloch, male (both from specimen from Ivory Coast in MNHN). **208.** Close-up view of base of antler and lateral finger. **209.** ST5 and ST5 flap. Abbreviations: *antl.* = antler; *e1* = proximal projection of distal part of external hypophallic lobe; *h.p.* = horizontal process; *l.f.* = lateral finger.

Discussion. The frons at vertex / head width ratio is remarkably constant, all the seven measured specimens having a ratio of 0.29. Lehrer (2005: 84) claims in the generic diagnosis that the internal hypophallic lobes (“lobes hypophalliques proximaux”) are absent. That is an error (cf. Fig. 205, *i.*). He failed to mention the absence of discal setae on T5, but mentions the strong setae on the upper part of the anepimeron. Lehrer (2005: 18) counted, unjustifiably, *B. aliena* among nominal taxa “à descriptions très sommaires des femelles, avec les types disparus et avec mâles ignorés ... désignées, sans base scientifique, comme espèces valides”, thus listed the female as unknown. The female is easily identified on the structure of the ovipositor sclerites, especially the characteristic ST6 and ST7, in combination with the absence of discal setae on T5, strong black setae on the upper part of the anepimeron, and yellow setulae elsewhere.

Biology. The dates of capture in material I have examined are in April, July–October and December. Zumpt’s (1956, 1962b) material is from April, May, August and September. Lehrer’s (2005) material is from the months of January and October.

Distribution. *Cameroon, *Congo, *Democratic Republic of Congo, *Equatorial Guinea (Fernando Po), *Gabon, *Ghana, *Ivory Coast, *Liberia, Nigeria.

Material examined. Type material. *Bengalia aliena* Malloch, 1927. **Holotype** female, in MNHN, labelled (1) Gabon / N’Djolé [handwritten] [misspelt by Malloch as “N’Djoli”]; (2) MUSEUM PARIS [printed on blue label]; (3) HOLO- / TYPE. [printed in black on red label]; (4) *Bengalia / aliena / Type / Det. / JRMalloch* [handwritten in Malloch’s hand, last two lines printed] (Fig. 197). Note. The holotype lacks the left antenna and the left palpus. The ST6 is present but the ST7 has been destroyed by poking with a forceps (?). T4 medial marginals moderately distant.



FIGURES 210–216. *Bengalia aliena* Malloch, female (all from specimen from Democratic Republic of Congo, Bambesa, NMSA-DIP 57881, in NMSA). **210.** ST1–5. **211.** Spermathecae. **212.** Uterus with sclerotised projections. **213.** Ovipositor, dorsal view. **214.** Ovipositor, left lateral view. **215.** Ovipositor, ventral view. **216.** Labels (4).

Other material. **IRD: Congo:** 1 female labelled (1) M'Vouti [now Mvouti] MC / 16-12-55 [handwritten]; (2) KR's determination label. **Cameroon:** 1 female labelled (1) Yaoundé / 8.59 / CAMEROUN / J. MOUCHET rec. [printed, except lines 1 and 2]; (2) BENGALIA / aliena Mall. / A. RICKENBACH ORSTOM dét. [handwritten except printed last line]. **MNHN: Ivory Coast:** 1 male labelled (1) MUSÉUM PARIS / Côte d'Ivoire / RÉSERVE du BANCO / R. PAULIAN & C. DELAMARE [printed on blue label with black frame]; (2) B. gaillardi [handwritten with pencil]; (3) KR's determination label. Note. The specimen was placed in the MNHN collection under *B. gaillardi*. It has been dissected by KR. The dried abdominal tergites T1–5 are glued to card above label; genitalia are in a glass microvial below the labels. **Gabon:** 1 female labelled (1) MUSÉUM PARIS / GABON / A.

VILLIERS [printed on bluish label]; (2) KOMO / Contreforts des / Mts de Cristal 400 m / 1-15 – X – 1969 [printed]. Note. The T5 has a weak median discal seta (the right). **NMSA: Ghana:** 1 male labelled (1) Obuasi / Ashanti / W. Africa / 12.vii.1907. / Dr.W.M.Graham. / 1908–245 [printed, except day and month in line 4]; (2) “Caught on leaf / in bush path.” [handwritten]; (3) Bengalia ♀ [sic] / aliena Mall. / det. Zumpt 74 [handwritten by Zumpt]; (4) NMSA-DIP / 17836 [printed on white label, text facing down]; (5) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (6) KR’s determination label. **Equatorial Guinea:** 1 male labelled (1) Fernando Po Id. [now = Bioco] / W.Cooper / B.M.1924–416 [printed]; (2) slide no. 35 [Zumpt’s handwriting]; (3) Bengalia ♂ / aliena Mall. / det. Zumpt 74 [handwritten by Zumpt]; (4) NMSA-DIP / 57882 [printed on white label]; (5) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (6) KR’s determination label. **Liberia:** 1 female labelled (1) Bendu / Robertsport / Liberia [printed]; (2) IV.25.1943 / F.M.Snyder [printed, except day, month and last digit in year, which are handwritten]; (3) Bengalia ♀ / aliena Mall. / det. Zumpt 52 [handwritten by Zumpt]; (4) NMSA-DIP / 57880 [printed on white label]; (5) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]; (6) KR’s determination label. **Democratic Republic Of Congo:** 1 female labelled (1) MUSÉE DU CONGO / Bambesa / 20 – IX – 1933 / H. J. Bredo [printed, except third line which is handwritten]; (2) Bengalia ♀ / aliena Mall. / det. Zumpt 55 [handwritten by Zumpt]; (3) NMSA-DIP / 57881 [printed on white label, text facing down]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label]. The specimen has been dissected by KR. Dried abdominal tergites T1–5 glued to card above labels; ST1–5 and ovipositor in glycerol in glass microvial below labels; spermathecae in glycerol in separate vial on separate pin labelled “NMSA-DIP / 57881” in pencil and KR’s determination label. Zumpt (1956: 167) erroneously gives the year of capture as 1953, whereas the label reads 1933 (Fig. 216). **RMNH / ZMAN: Gabon:** 1 female labelled (1) GABON, Ogooué-Maritime / RABI, next 1-ha plot / 1°55.7'S 9°52.5'E / 23.IX-5.X.1994 mal.trap / gap in primary forest / J.J. Wieringa [white printed label]; (2) KR’s determination label. Note. Upper black anepimeral setulae not particularly strong.

10. *Bengalia wyatti* (Lehrer, 2005), **comb. nov.**

Figs. 217–235.

Shakaniella wyatti Lehrer, 2005: 82. Holotype male (BMNH, examined), by original designation. Type locality: South Africa (KwaZulu-Natal: Richmond).

Shakaniella sakinehae Lehrer, 2011a: 8. Holotype male (TAU, not examined), by original designation. Type locality: Malawi (“Viphya Mts., Chikangawa”). **Syn. nov.**

Note. Lehrer does not diagnose this nominal species, i.e., he does not list the features by which it is separable from *B. wyatti*. The frontal vitta is described as bare. The abdominal chaetotaxy is incompletely described. The ST5 flap is figured as having sharply pointed posterior corners. The various processes shown in his drawing of the distal part of the distiphallus are not easy to interpret and relate to factual features, such as upper lip, basal tooth and the broad antler with the medial shelf projecting over the sides of the upper lip. The differences in the illustrations by Lehrer of the antlers in *B. wyatti* and *B. sakinehae* cannot be given any weight as he has chosen to illustrate this structure in lateral view only, whereas an apical view is necessary to understand its true morphology. In addition, Lehrer’s figure seems to indicate a rupture of the antler or upper lip. The differences may be artifacts resulting from his method of preparation of genitalia for microscopy (Lehrer 2011b).

Diagnosis. *Male.* Length: 9.5–11 mm (n=2) [first number from Lehrer 2005]. Frons at vertex / head width ratio: 0.29–0.32 (mean 0.31, n=2) [first number from measurements of photograph of holotype head in anterior view]. Not easily identified because many of its traits mimic the condition in members of the *B. spinifemorata* species-group, but the structure of the distiphallus is unmistakable.

A dark brown almost shining spot at junction of fronto-orbital plate and parafacial. Frontal vitta practically bare, at most up to six sparse and exceedingly minute setulae. Only pale setulae on anepimeron in the holotype, but there is a small upper group of 3–5 dark setulae in the NMSA specimen. No strong setae in its upper part. Fore tibia with a row of 3–5 strong setae on proximal half of ventral surface. Fore femur with 2–7 *pv* spinous setae. Hind tibia with no or a much reduced fringe.

T4 with a median marginal pair of setae close together and widely separated from lateral marginals (Fig. 220). T5 with 2 discal setae.

ST5 flap as in Fig. 234, mimicking to some extent the ST5 flap in *B. seniorwhitei* (Lehrer) (cf. Rognes 2011a: 14, fig. 33), but being shorter anteroposteriorly.

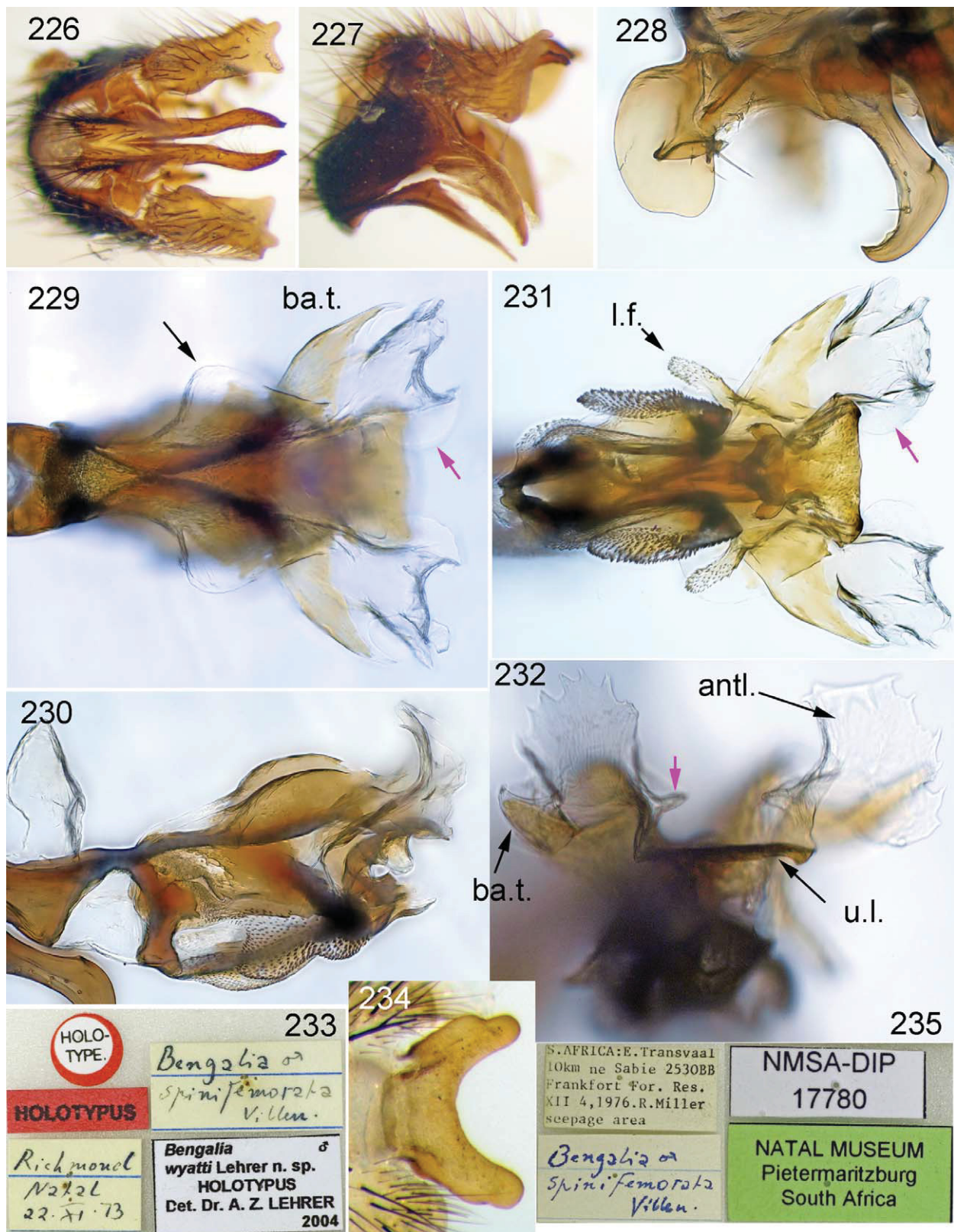


FIGURES 217–225. *Bengalia wyatti* (Lehrer), male (217, 218, 220–222, 225 from holotype of *Shakaniella wyatti* in BMNH; 219, 223, 224 from specimen from South Africa, NMSA-DIP 17780, in NMSA). **217.** Frons, anterior view. Small white arrows point to minute setulae. **218.** Left anepimeron. **219.** Left anepimeron. **220.** T4 (margin only) and T5. **221.** Left fore femur, posterior view. **222.** Right fore femur, posterior view, and left fore tibia, anterior view. **223.** Left fore leg. **224.** Left mid and hind legs. **225.** Right hind tibia, anterior view.

Cerci slender and curved in dorsal view, leaving an oval space between them distally. Surstylus complex and bifid distally. Bacilliform sclerite process is a blunt weakly projecting triangle.

The dorsolateral wing of the distiphallus flaring out posteriorly in a broad, almost unsclerotised horizontal projection on each side. Distally the dorsolateral wing is well sclerotised and projects upwards and laterally, as usual. The antler is very broad and extensive, transparent and fan-shaped, and its upper and lateral edge is coarsely serrate (Fig. 232). The antler is concave on the anteroventral and anterolateral side forming a kind of broad gutter, starting from under the upper lip on each side and proceeding upwards and forwards. At the base of the antler is a prominent well sclerotised basal tooth. The upper lip is straight in anterior view. On the inside of each antler there is a small horizontal transparent medial projection, forming a kind of shelf above the upper lip on each side (Figs 229, 231, 232). The lateral finger is rather large. The external hypophallic lobe is prominent and broad in ventral view.

Female. Unknown.



FIGURES 226–235. *Bengalia wyatti* (Lehrer), male (226, 227, 233, 234) from holotype of *Shakaniella wyatti* in BMNH; 228–232, 235 from specimen from South Africa, NMSA-DIP 17780, in NMSA). **226.** Cerci and surstyli, posterior view. **227.** Cerci and surstyli, lateral view. **228.** Pre- and postgonites, left. **229.** Distiphallus, dorsal view. Magenta arrow points to median shelf on antler. Black arrow points to projection of dorsolateral wing. **230.** Distiphallus, left lateral view. **231.** Distiphallus, ventral view. Magenta arrow points to median shelf on antler. **232.** Distiphallus, oblique apical view. Magenta arrow points to median shelf on antler. **233.** Labels (5). ST5 flap. **235.** Labels (4). Abbreviations: *antl.* = antler; *ba.t.* = basal tooth of antler; *l.f.* = lateral finger; *u.l.* = upper lip.

Discussion. Lehrer (2005: 82) describes the dorsolateral wing (“paraphallus”) as having a large mediodorsal excavation followed by a posterior curvature (“une forte excavation médiodorsal suivie d’une courbure postérieure”). The fact is that there is no excavation at all, but in lateral view there appears to be one, because the posterior part of the dorsolateral wing is weakly sclerotised and projecting outwards horizontally. He has not properly characterized the complex structure of the antler (“apophyses latérales”), described briefly as rather long but not bifid (“assez longues, mais pas bifides”). Had he seen the antler in apical view (Fig. 232) he would certainly have used other words.

Biology. Unknown. Dates of capture of material examined are in November and December.

Distribution. Malawi, *South Africa.

Material examined. Type material. *Shakaniella wyatti* Lehrer: 2005. Holotype male, in BMNH labelled (1) HOLOTYPE [printed on round label with red rim]; (2) HOLOTYPUS [printed on red label]; (3) Richmond / Natal / 22. XI. 73 [Zumpt’s handwriting]; (4) Bengalia [male symbol] / spinifemorata / Villen. [Zumpt’s handwriting]; (5) Bengalia [male symbol] / *wyatti* Lehrer n. sp. / HOLOTYPUS / Det. Dr. A. Z. LEHRER / 2004 [printed]. The genitalia were transferred from Lehrer’s big plastic vial to a small glass microvial. The genitalia had a layer of an undissolved substance making photography difficult.

Other material. NMSA. South Africa: 1 male labelled (1) S. AFRICA: E. Transvaal / 10 km ne Sabie 2530BB / Frankfort For. Res. / XII 4, 1976. R. Miller / seepage area [printed]; (2) Bengalia / spinifemorata / Villen. [Zumpt’s handwriting]; (3) NMSA-DIP / 17780 [printed]; (4) NATAL MUSEUM / Pietermaritzburg / South Africa [printed on green label] (5) KR’s determination label. Note. Zumpt had extracted the hypopygium from the tip of the abdomen and glued it to a card on the pin. The ST5 flap is intact and *in situ* on the abdomen. In order to study the genital parts, I removed the whole card and soaked it in 10% KOH. After a while the genitalia loosened and could be further treated according to usual procedure. The genitalia are now in glycerol in a glass microvial on pin below label no. 4. The specimen has only a single discal seta on T5; median marginal pair of setae on T4 very close together and widely separated from lateral marginals.

***Bengalia spinifemorata* species-group**

The following species is transferred to the *B. spinifemorata* species-group from its original position in the *B. peuhi* species-group (Afridigaliinae of Lehrer) on account of the structure of the distiphallus. There are no dorsolateral wings, and no antlers. There is clearly a veil and an associated veil process, a flat, transverse and forwardly facing hypophallic lobe on each side, and a very narrow opening of the ejaculatory duct on the tip of a tube-like structure reminiscent of the beak in the other *B. spinifemorata* group members (cf. Rognes 2011a).

11. *Bengalia bantuphalla* (Lehrer, 2005), comb. nov.

Figs. 236–256.

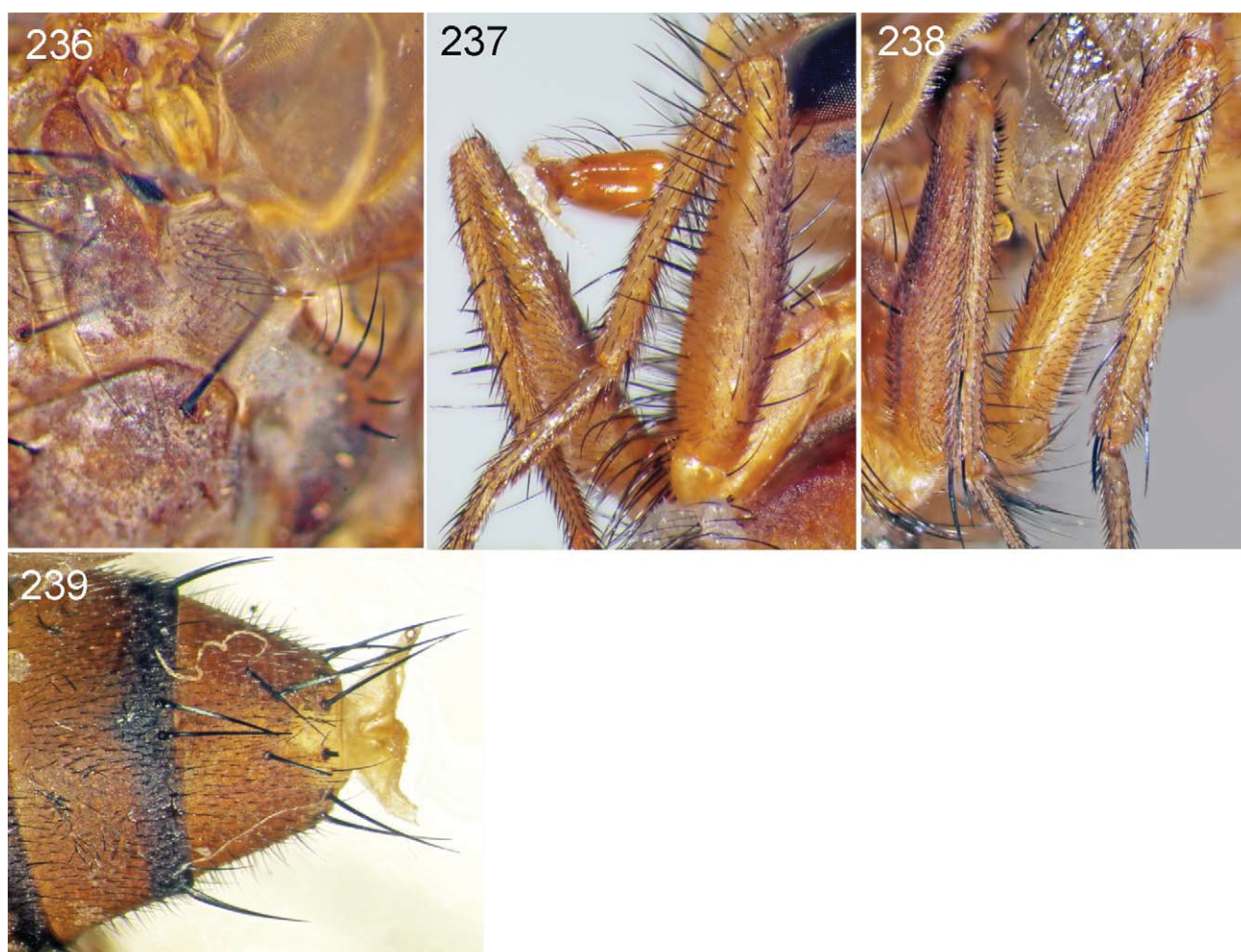
Kenypyga bantuphalla Lehrer, 2005: 80, 81 figs. 35A–E. Holotype male (BMNH, examined), by original designation. Type locality: Kenya, “S.W. Elgon 6,700 ft.”.

Diagnosis. Male. Length: 10mm (n=2). Frons at vertex / head width ratio: 0.32–0.33 (mean 0.33, n=2). Not easily diagnosed on external features and examination of the male genitalia is necessary for identification.

In holotype anepimeron with black setulae above and pale setulae on lower half or more. In paratype in TAU anepimeron mostly with dark setulae. The other BMNH specimen (not a type) also has almost only black setulae on the anepimeron, so the amount of yellow setulae varies. Fore femur with 2–3 strong *pv* spinous setae near middle. Fore tibia with 3–4 strong *v* spine-like setae, and elongate setulae in distal half. No fringe on mid or hind tibiae.

T4 median marginals very close together. ST5 flap with a broad and deep apical excavation (Figs. 249, 253).

Cerci with strongly sclerotised prongs, strongly bent downwards distally in lateral view. Surstylus broad with roughly parallel medial and lateral edges, distally weakly flaring, strongly concave on underside. The process of the bacilliform sclerite a narrow pointed well developed hook.



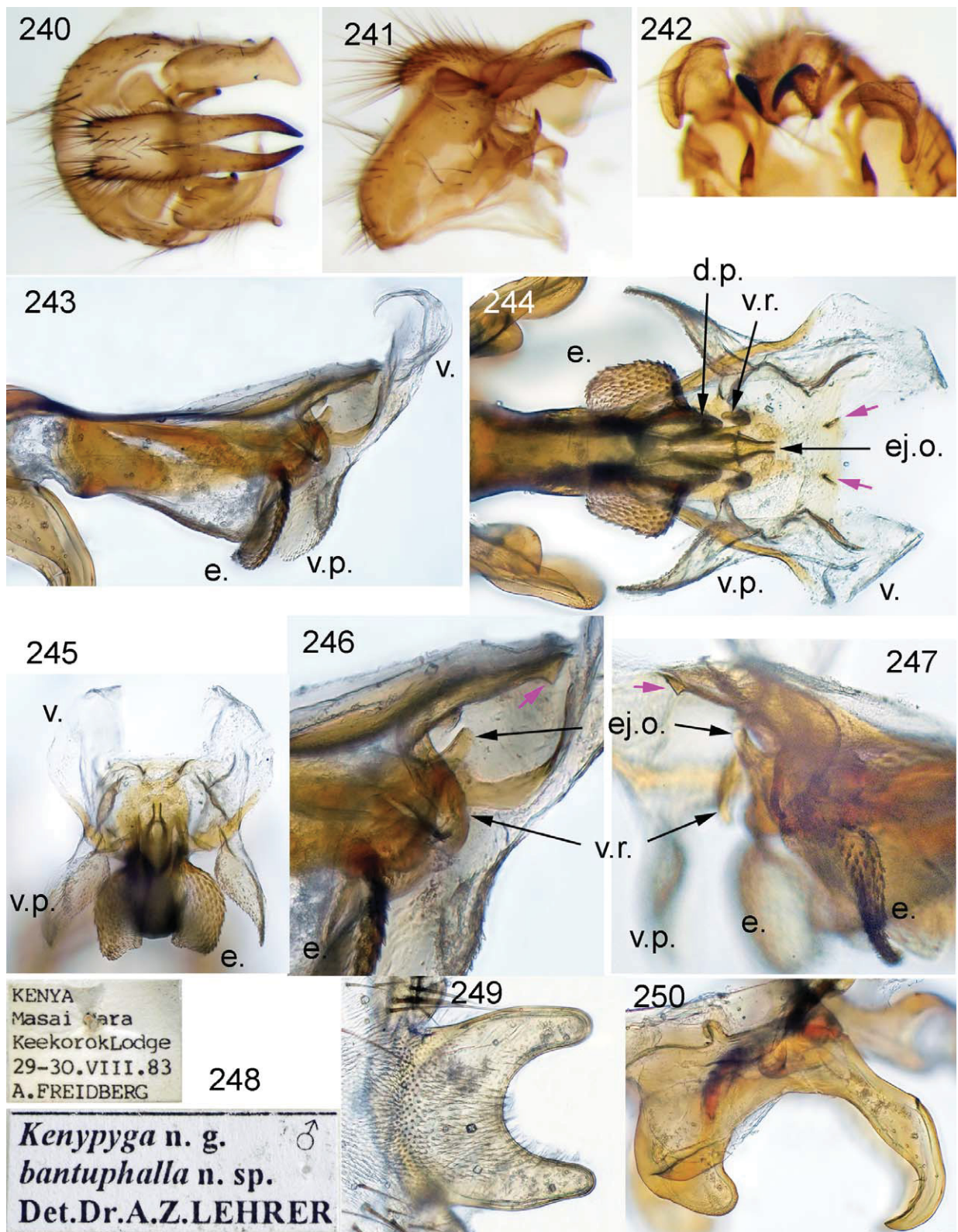
FIGURES 236–239. *Bengalia bantuphalla* (Lehrer), male (236 from specimen from Kenya, “W. of Mt. Kenia”, in BMNH; 237–239 from paratype from Kenya, Masai Mara, in TAU). **236** Left anepimeron. **237.** Right and left fore legs. **238.** Left mid and hind legs. **239.** T4 and T5.

Distiphallus without dorsolateral wings. A strongly developed and oval apical veil, proceeding upwards and forwards on each side, with an even, not serrate, margin. Veil facing mainly forwards, its largest extent seen in apical view. Ventrally each veil is directly continuous with a weakly sclerotised veil process, a large, oval and flat structure with small serrations or denticles near margins and on parts of the surface. External hypophallic lobe strongly denticulate all over, facing anteriorly, with a small dentate process dorsodistally. Internal hypophallic lobe visible as a denticulate ventral ridge in lateral view of basal half of distiphallus. A beak hardly differentiated. Opening of the ejaculatory duct narrow, at the end of an upturned tube, far behind apex of distiphallus. The tube originates in a swollen structure between the dentate processes of the external hypophallic lobe. A long sclerotised vertical rod (*v.r.*) on each side of the upturned tube carrying the opening of the ejaculatory duct. A pair of small triangular strongly sclerotised projections on underside of fore margin of lamella between base of veils (Figs. 244, 246, 247, magenta arrows).

Female. Unknown.

Discussion. This species obviously belongs in the *B. spinifemorata* species-group. In the list of 10 synapomorphies establishing the monophyly of that species-group (Rognes 2011a: 27), only two are not present in *B. bantuphalla*, i.e., the anepimeron is not covered only with pale setulae (item 1), and the abdomen is not all yellow, but has broad dark marginal bands on T1+2–T4 (item 4), even though the tip of T5 is all yellow. In the list I failed to mention an eleventh synapomorphy, namely the close position of the T4 median marginals in all *B. spinifemorata* species-group members. This synapomorphy is also shared with *B. bantuphalla* (Fig. 239).

Lehrer (2005) described neither the position of the T4 median marginals, nor the vestiture of the fore femur in any of the species he included in the *B. spinifemorata* species-group (his “*Maraviola*”). He also omitted to mention the fore femoral spinous seta in *B. bantuphalla*.



FIGURES 240–250. *Bengalia bantuphalla* (Lehrer), male (all from paratype from Kenya, Masai Mara, in TAU). **240.** Cerci and surstyli, posterior view. **241.** Cerci and surstyli, lateral view. **242.** Cerci and surstyli, apical, “internal” view. **243.** Distiphallus, left lateral view. **244.** Distiphallus, apico-ventral view. Magenta arrows point to tooth-like projections. **245.** Distiphallus, apical view. **246.** Distal part of distiphallus, left lateral close-up view. Magenta arrow points to tooth-like projection. **247.** Oblique right apico-lateral close-up view, showing opening of ejaculatory duct, vertical rods and small ventral tooth-like projections on membrane between veils. Magenta arrow points to tooth-like projection. **248.** Labels (2). **249.** ST5 flap. **250.** Pre- and postgonites. Abbreviations: *d.p.* = dentate process; *e.* = external hypophallic lobe; *ej.o.* = opening of ejaculatory duct; *v.* = veil; *v.p.* = veil process; *v.r.* = vertical rod.

Lehrer (2005: 80) claimed that there are strong setae on the upper posterior part of the anepimeron (“quelques macrochètes sur leur marge supéro-postérieure”). This is an error, as can be seen in Fig. 236, made from a non-syntypic male. Also, no strong setae are present in this position in the holotype and the paratype.

Lehrer (2005: 80) claimed that the internal hypophallic lobes are absent in *B. bantuphalla*. This is also an error, it can easily be observed as a dentate ridge, he even illustrated the ridge himself in his figure 35C (reproduced in Fig. 256, *i.*). Lehrer claimed that the external hypophallic lobes (*e.*) are reduced to a narrow spinulate zone (“Les lobes hypophalliques antérieurs sont réduits la [sic] une zone spinulée étroite, mais longue”). This statement refers to a special part of his drawing situated just proximal to the oval veil process. The drawing shows the external hypophallic lobes as they appear when seen edge-on (*e.*). It is unfortunate that Lehrer studies a complex and almost flat organ from lateral view only, since this leads to errors in interpretation.

The species is clearly very rare, but specimens may be hiding in collections under *B. spinifemorata*.

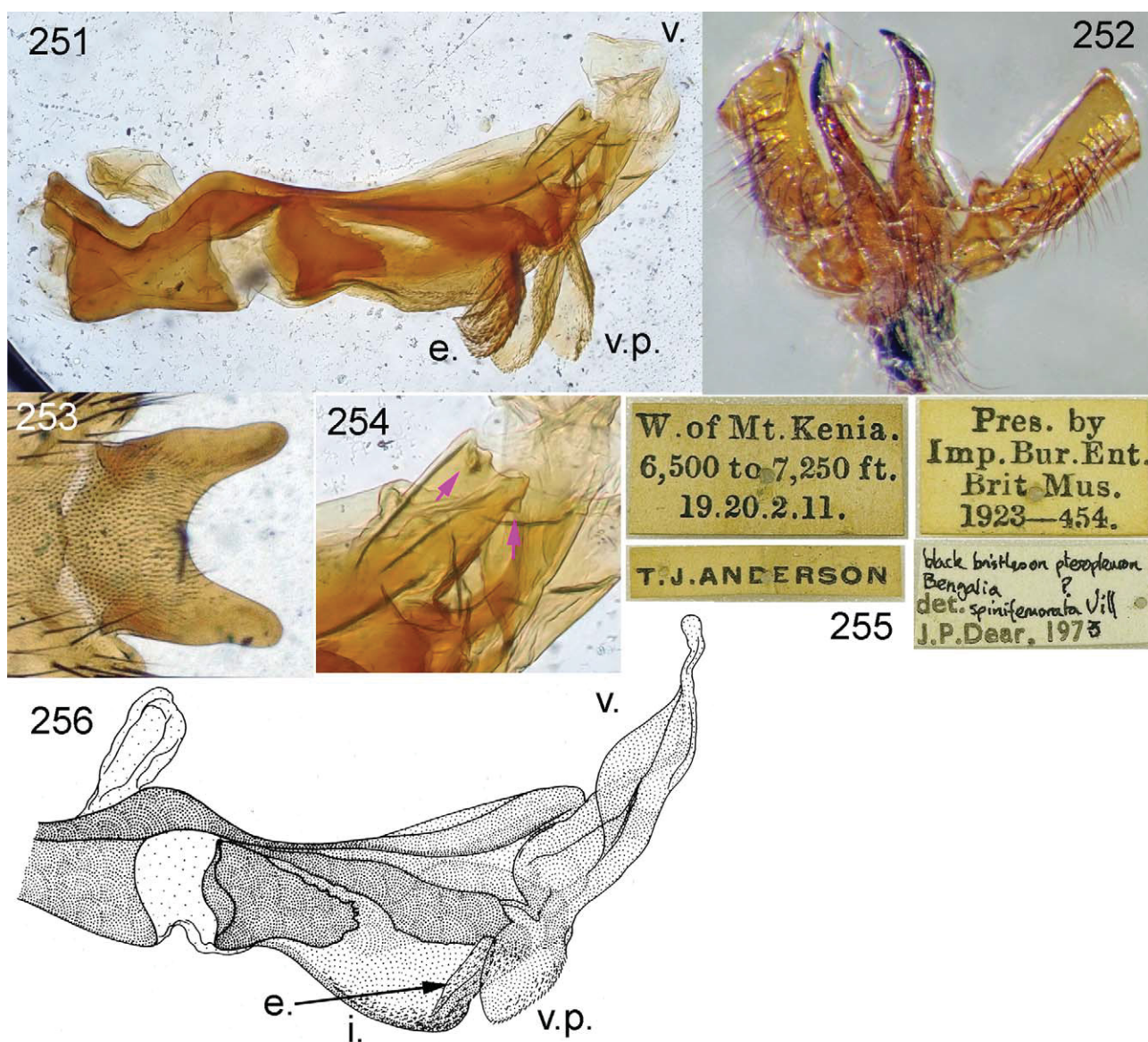
Biology. *Bengalia bantuphalla* appears to prefer high altitudes. The two BMNH specimens were captured between 6500 to 7250 ft. (= 1981–2210m a.s.l.). Dates of capture of examined material are in February, between June and August (“vi–viii”) and August. Material that has now been lost (see below) was captured in late April and/or May.

Distribution. *Kenya.

Material examined. Type material. **Holotype** male, in BMNH, labelled (1) HOLO- / TYPE. [printed on white circular label with a red rim]; (2) KENYA: / S.W.Elgon.6,700ft. / vi–viii.1961. / T.H.E.Jackson & / J.Abraham. / B.M.1961-697. [printed]; (3) At / light [printed]; (4) HOLOTYPUS [printed in black on red label]; (5) *Bengalia* ♂ / *bantuphalla* Lehrer n. sp. / HOLOTYPUS / Det. Dr. A. Z. LEHRER / 2004 [printed]. The specimen is greasy. The genitalia were in glycerol in a big plastic vial at the reception of the specimen on loan. These were rinsed out of the vial into a 4.2 x 4.2 x 1.2 cm glass microdish by means of a glass dropper filled with glycerol. The three genital items were: ST5 + ST5 flap; aedeagus + hypandrium + phallapodeme + pre- and postgonites (both postgonites were broken near base, ejaculatory sclerite absent); cerci + bacilliform sclerites + surstyli (right cercus was broken midway, right surstylus absent). All pieces were more or less covered or embedded in a whitish substance. The pieces were macerated in cold 10% KOH for 26 hours, transferred to water where they stayed for 16.5 hours, thereafter treated for 4 hours in alcohol, finally transferred to glycerol again. After 2 hours in glycerol, it was possible to bend the aedeagus backwards and expose the gonites. Distiphallus exactly as in paratype in TAU. ST5 flap slightly different from illustration in Lehrer’s book. **Paratype.** TAU: 1 male labelled (1) KENYA / Masai Mara / KeekorokLodge / 29–30.VIII.83 / A. FREIDBERG [printed]; (2) *Kenypyga* n. g. ♂ / *bantuphalla* n. sp. / Det.Dr. A.Z.LEHRER [printed; pinhole in middle]; (3) holotypus [red label with black print]; (4) *Kenypyga* n. g. ♂ / *bantuphalla* n. sp. / Det.Dr. A.Z.LEHRER [printed; pinhole near right end of label]; (5) Not / holotypus / K. Rognes det. 2012 [handwritten in pencil, last line except year is printed]; (6) KR’s determination label. Note. The genitalia (ST5 flap, aedeagus + pre- and postgonites + phallapodeme + ejaculatory sclerite, cerci + surstyli + bacilliform sclerites) were completely dried out in the big plastic vial when I received the specimen. The pieces were treated with 10% KOH for about 30 hours, rinsed in water for 12 hours, transferred to ethanol for 27 hours and then transferred to glycerol. When first inspected in KOH the genitalia were completely covered by a thin layer of whitish dust-like substance. But after several days in glycerol the genitalia had cleared up very well and were successfully photographed. There appears to be remains of an unknown substance (bergamot oil?, cf. Lehrer’s description (2011b) of how he prepares the genitalia) which gives the photographs a bluish hue.

According to Lehrer (2005) there are two further paratypes in TAU, both from Kenya (Freidberg & Kaplan leg.). They were captured “29.IV–15.V.1991” and on “12.V.1991”. They are no longer present in TAU, and are possibly lost or destroyed (Netta Dorchin, pers. comm.).

Other material. BMNH: 1 male labelled (1) Pres. by / Imp.Bur.Ent. / Brit. Mus. /1923–454. [printed]; (2) T.J.ANDERSON [printed]; (3) W. of Mt. Kenia. / 6,500 to 7,250 ft. / 19.20.2.11 [printed; = 19–20 February 1911]; (4) black bristles on pteropleuron / *Bengalia spinifemorata* Vill ? det J.P.Dear 1973 [printed and handwritten text spread over 4 lines]. Note. The pin carries a flat rectangular plastic sheet with the ST5 flap, aedeagus in profile, and the cerci and surstyli mounted flat in Canada balsam under a cover slip. The distiphallus clearly fits this species, as evidenced by the two projecting triangles on the flat lamella between the bases of the veils (Fig. 254), the peculiar external hypophallic lobes and the leaf-shaped veil processes.



FIGURES 251–256. *Bengalia bantuphalla* (Lehrer), male (251–255 from specimen from Kenya, “W. of Mt. Kenia”, in BMNH; 256 from Lehrer 2005: 81 fig. 35 C, harvested 1 April 2012 from http://commons.wikimedia.org/wiki/File:Fig_35.Kenypyga_bantuphalla_Lehrer_n.jpg). **251.** Canada balsam mount of aedeagus, left side up. **252.** Canada balsam mount of cerci and surstyli. **253.** Canada balsam mount of ST5 flap. **254.** Close-up of Canada balsam mount of aedeagus showing small ventral tooth-like projections on membrane between veils (magenta arrows). **255.** Labels (4). **256.** Aedeagus (my lettering). Abbreviations: *e.* = external hypophallic lobe; *i.* = internal hypophallic lobe; *v.* = veil; *v.p.* = veil process.

Synopsis of all known Afrotropical species of *Bengalia*

Note. I have also revised the material published by Kurahashi & Kirk-Spriggs (2006: 63) under the name *B. spinifemorata*. Specimens (a total of 6 males and 6 females) from the Namibian localities Okazewana, Varianto (1 male dissected), Aha Hills, Toggenburg (1 male dissected) and Longipolis ravine pan were misidentified and belong to *B. akamanga* (Lehrer, 2005) (first records from Namibia). The specimens listed for the other localities under the name *B. spinifemorata* were also misidentified and belong to *B. peuhi*.

1. *Bengalia peuhi* species-group

1.1. *Bengalia peuhi* subgroup

Bengalia minor Malloch, 1927

Bengalia peuhi Villeneuve, 1914

- 1.2. *Bengalia floccosa* subgroup
 - Bengalia depressa* Walker, 1858
 - Bengalia floccosa* (Wulp, 1885)
 - Bengalia gaillardi* Surcouf & Guyon, 1912
 - Bengalia roubaudi* Rickenbach, Hamon & Mouchet, 1960
 - Bengalia tibiaria* Villeneuve, 1926
- 1.3. Species *incertae sedis*
 - Bengalia africanoides* **sp. nov.**
 - Bengalia aliena* Malloch, 1927
 - Bengalia wyatti* (Lehrer, 2005)
2. *Bengalia spinifemorata* species-group
 - Bengalia akamanga* (Lehrer, 2005)
 - Bengalia bantuphalla* (Lehrer, 2005)
 - Bengalia racovitzai* (Lehrer, 2005)
 - Bengalia seniorwhitei* (Lehrer, 2005)
 - Bengalia smarti* (Lehrer, 2005)
 - Bengalia spinifemorata* Villeneuve, 1913b
 - Bengalia wangariae* (Lehrer, 2005)

Notes on *Ochromyia petersiana* Loew, 1852

Ochromyia petersiana Loew, 1852: 660 (as *Ochromyia Petersiana*; incorrect original spelling, see Article 32.5.2.5 of ICZN 1999). Syntypes (sex or number of specimens not indicated) from Mozambique (Tete), without further mention of locality.

Ochromyia petersiana: Loew 1862: 20 (as *Ochromyia Petersiana*). A male (or males) from Inhambane (Mozambique) is described in detail.

Ochromyia petersiana: Pont 1980: 791. Catalogue entry as questionable senior synonym of *Bengalia depressa* Walker.

Thoracites neglectus Zumpt, 1972: 49, 50 fig. 2. Holotype male (NMSA, not examined), by monotypy. Type locality: South Africa, KwaZulu-Natal, Mtubatuba. **Syn. nov.**

Thoracites neglectus: Kurahashi 2001: 152. One male specimen from Mtubatuba (apparently the holotype cited above) and one male from KwaZulu-Natal, Ndumu Game Res. Camp (both in NMSA, not examined).

The nominal species *Ochromyia petersiana* was described over four lines in Latin by Loew (1852) on the basis of an unstated number of specimens of unstated sex and unstated locality [except for “Mossambique” in the title of Peters’s presentation of Loew’s results, cf. Loew (1852: 658)]. In a later paper Loew (1862) gave a long description of the male sex, again without stating the number of specimens before him, on the basis of material from Inhambane. There is no evidence, however, that Loew had only one specimen before him when he prepared the description of the male.

Ochromyia petersiana Loew was listed as a questionable senior synonym of *Bengalia depressa* by Pont (1980), possibly following suggestions to that effect by Bezzi (1892: 189, as synonym of “*O. limbata*, Bigot”) and Bezzi (1908: 77). However, the very detailed description in German by Loew (1862) seems not to confirm a placement in *Bengalia*, for several reasons: (1) It is described as having “die langgefiederte, an der Spitze aber nackte Fühlerborste der Sarcophaga-Arten ... [the long-plumose arista, bare distally, of *Sarcophaga*-species ...]”. The arista of *Bengalia* species is not bare distally. (2) The thorax is described as having the ground colour “sehr dunkel mit metallischgrünen, zuweilen mit kupferrothem Glanze, welcher durch die den ganzen Thorax bedeckende Bestäubung hindurch nur bei einiger Aufmerksamkeit bemerkt wird ... [very dark with a metallic green or sometimes coppery red shine which can only be seen with careful examination through the dusting that covers the whole thorax]”. No *Bengalia* shows a metallic green or coppery red coloured thorax covered by a layer of microtomentum. (3) The “kleiner fünfte Ring” (T5 or epandrium?) is described as “glänzend schwarz [shining black]” as opposed to the preceding four abdominal “rings” which are described as “rothbräunlich [reddish brown]”, with “schwarzer Hinterrandsbinde und schwarzer Mittelinie [black hind-marginal bands and a black middorsal stripe]” and completely covered with “messinggelblicher, wechselschillernder Bestäubung [brassy-yellowish, shifting microtomentum]”. On the assumption that the “kleiner fünfte Ring” refers to T5, we can say with confidence that such a combination of colours is never encountered in the abdomen of a *Bengalia*. The

Nepalese *Bengalia subnitida* James, 1964 is described as having a shining black abdomen, but the shining blackness does not apply to T5 only. However, if the “kleiner fünfte Ring” is the epandrium the remainder of abdomen is definitely reminiscent of that of a *Bengalia* species.

Thanks to the efforts of Joachim Ziegler (MNHUB) I am able to give some additional information on *O. petersiana*. The male (or males) from “Inhambane” which served as the basis for the detailed 1862 description, appears to have been lost, at least there is now no male in Loew’s collection in MNHUB. However, in MNHUB there are two females under the name *O. petersiana*. Both bear a locality label reading “Tette / Peters”, indicating that they were captured at Tete in Mozambique by Peters. “Tette” is a locality mentioned elsewhere in Loew’s 1862 paper, but not under “*Ochromyia Petersiana*”. One of the females has an undated Loew determination label reading “*Ochromyia* / *Petersiana* / m.” [m = mihi, i.e., Loew’s species]. Loew (1852) gave no indication of sex or locality when he named his species, but given that these females were most likely at hand when Loew described *O. petersiana*, we are entitled to consider these females as syntypes, in accordance with Article 72.4.1.1 of the Code (ICZN 1999) which allows taking any evidence into account to determine what specimens constitute the type series. Loew must have coined the name, thus labelled the specimens, before the name was made public by Peters (in Loew 1852) who “legte Diagnosen und Abbildungen der von ihm in Mossambique neu entdeckten Dipteren vor, welche von Hrn Professor Loew bearbeitet worden sind”, thus that both females were before Loew when he created the nominal species in 1852. Similarly, we are not justified in regarding the status of the lost male as a holotype, and possibly not even a syntype, since Loew described the male ten years after he published the name *Ochromyia petersiana*. A holotype must be designated in the original publication, which Loew (1852) did not do (Article 73.1.3 of the ICZN 1999).

Both specimens fit the descriptions of Loew (1852, 1862), and the T6 of the ovipositor is visible and shining black. In one of the specimens (syntype no. 1, below) the curved, densely set spines at the tip of the ovipositor are visible. Both specimens run to *Thoracites* Brauer & Bergenstamm, 1891 in Zumpt’s (1958) key, on account of the plumose arista (with a distal region with very short hairs, giving the impression of being bare under low magnification) and the absence of an outer *ph*.

The *prst ac* and *prst dc* setae are well developed, and the T3–5 are without lateral discal setae. The basicosta is yellowish and the epaulet brownish. The abdomen has a yellow ground colour with a strong microtrichiosity in a shifting pattern according to angle of view, also on the ventral parts. T1+2 is yellow except for short black marginal bands laterally. T3 also has black marginal bands, their width about one third of the length of the tergite, their inner ends are closer to the mid-dorsal line than those on T1+2, and there is a separate narrowly triangular dark line middorsally, reaching forward to the anterior edge in syntype no. 1 and more than halfway to the anterior edge in syntype no. 2. T4 has a complete black hind marginal band about as wide as 2/5 of tergite length dorsally, and a mid-dorsal narrow dark line reaching the anterior edge. T5 has a hind marginal black band about as wide as half the tergite length. The anterior half of T5 is strongly microtrichiose, almost hiding the yellow ground colour. ST1 is yellow, but the colour of the other sternites cannot be determined since hidden by the extreme ventral edges of tergites T3–5 which are all black.

The females seem conspecific. I have not selected a lectotype, which is better left to a specialist revising the females of *Thoracites*.

Zumpt (1972) recognised three Afrotropical species in *Thoracites*, i.e., *T. cingulatus* Bezzi, 1914 (type locality Senegal; also from Mozambique and South Africa), *T. neglectus* Zumpt, 1972 (based on a single male from South Africa) and *T. nigeriensis* Zumpt, 1972 (based on three males from Nigeria) (cf. Bezzi 1914, Peris 1952, Zumpt 1972, Pont 1980). Subsequently, Kurahashi (2001) revised the genus and added three more Afrotropical species, i.e., *T. kirkspriggsi* Kurahashi (based on males and females from Namibia), *T. nigrifacies* Kurahashi (based on males and females from Namibia) and *T. sarcophagoides* Kurahashi (based males and females from Namibia). There are also two Oriental species: *T. abdominalis* (Fabricius, 1805) (known from males and females from India and Sri Lanka) and *T. miltogrammoides* Kurahashi, 2001 (based on males and females from Sri Lanka).

Loew’s name *petersiana* from 1852 thus predates the oldest name in use for an Afrotropical species of *Thoracites* by more than 50 years.

Thoracites petersiana (Loew) may appear to be a senior synonym of *Thoracites cingulatus* Bezzi, since it fits Bezzi’s (1914) description well, and also fits the habitus photograph of a female *T. cingulatus* Bezzi identified by Zumpt (Kurahashi 2001: 160 fig. 29a). In Kurahashi’s key (2001) the yellowish face, the lack of outer *ph*, the indistinct triangular dark spot below anterior lower margin of eye, and the largely yellow T1+2 lead to *T. neglectus*

or *T. kirkspriggsi*. In the former the epaulet is given as blackish (statement based on two males), whereas yellowish-brown in the latter. *Thoracites cingulatus* is included in Kurahashi's key, but no information about the colour of the epaulet is given.

Zumpt (1972: 52) claimed that Bezzi described *T. cingulatus* on the basis of a male specimen, but this claim is unjustified. In Bezzi's original description, in the first line on p. 290, there is a female symbol immediately after the name of the new species. A little further down, on line 6, Bezzi writes "Un maschio di Thies, Senegal [a male from Thies, Senegal]". This sentence is cited by Zumpt as evidence for a male type. However, the description to follow this line indicates that the specimen before Bezzi was actually a female. On lines 19–20 he states, concerning the characteristics of the genus *Thoracites*, that "nella ♀ esistono solo 2 orbitali esterne, forte e bene sviluppate, da ogni lato [in the ♀ there are only 2 external orbitals, strong and well developed, on each side]", whereas "in *Idiopsis* invece, come in *Rhyncomyia*, la fronte della ♀ presenta molte piccole setole disordinate al posto delle orbitali esterne, senza che fra di esse campeggino in modo particolare quelle maggiori [in *Idiopsis*, on the contrary, as in *Rhyncomyia*, the frons of the female bears a number of small irregularly placed setae instead of the external orbitals, without any one of these appearing as more prominent than the others]". On lines 2–4 from below he states that "tutte le macrochete son nere e robuste [all the setae are black and strong], così anche les ocellari e le due paia di orbitali esterne [as is also the case with the ocellars and the two pairs of external orbitals]". Thus Bezzi described the presence of two pairs of "external orbitals" in his specimen. Such setae are only present in females, according to Zumpt's (1958, 1972) and Kurahashi's (2001) descriptions. So we have to take Bezzi's words as proof that the single specimen that served as the basis for his description is a female.

Through the kindness of Fabrizio Regato (MSNM) I have been able to study the holotype of *T. cingulatus* Bezzi from Senegal. It is labelled as follows: (1) Thies / Africa occ. / 1912 [handwritten; not by Bezzi]; (2) *Thoracites / cingulatus* / n. [handwritten by Bezzi]. It is a female, as expected. It is similar to the syntypes of *Ochromyia petersiana* in general facies, although paler. Both have the basicosta yellow and the epaulet brownish, although the epaulet is somewhat paler in *cingulatus* than in *petersiana*. The hind marginal black band on T5 is much narrower in the holotype of *T. cingulatus* (mid-dorsally about 1/4 of the length of T5) than in the syntypes of *O. petersiana* (mid-dorsally about half the length of T5), and the abdomen appears yellower and less microtrichiose than the one in *O. petersiana*. Whereas the yellow ground colour of T5 is prominent in the *T. cingulatus* holotype, it is almost completely hidden by a dense layer of microtomentum in the *O. petersiana* syntypes. I think the holotype of *T. cingulatus* and the syntypes of *O. petersiana* represent different species, thus that these names are not synonyms.

I have examined a large series of males (11, two dissected) and females (43, none dissected) all from South Africa (KwaZulu-Natal, Ndumo Game Reserve, near the Mozambique border) and all captured in Malaise traps between 4–8.xii.2009 by A. Kirk-Spriggs (in BMSA). All seem to be conspecific and belong to *T. neglectus* Zumpt according to the dissected male genitalia. The epaulet is black in the males and brownish yellow in the females. The male and female also differ in the colour of the abdominal T1+2, which is all black in all the males, but yellow with only a narrow lateral marginal black band in the females. I cannot distinguish these females from the syntypes of *O. petersiana*. Interestingly, Kurahashi (2001) lists a second male of *T. neglectus* from near the same "Ndumu Game Res. Camp" in South Africa which has been identified by Zumpt himself. Therefore I find it likely that *O. petersiana* is a senior synonym of *T. neglectus*, and have listed the latter name as a junior synonym above.

Material examined. Two syntype females (nos. 1 and 2, respectively below), both in MNHUB. Syntype no. 1 labelled (1) Tette / Peters [handwritten by Loew]; (2) small magenta square label; (3) *Ochromyia / Petersiana* / m. (4) Coll. / H.Loew [white label, handwritten text in pencil]; (5) Zool. Mus. / Berlin [printed]. Note. The right wing was glued to a card at the reception of the specimen. • Syntype no. 2 labelled (1) Tette / Peters [handwritten by Loew]; (2) small magenta square label; (3) Coll. / H.Loew [yellow label with printed text]; (4) Zool. Mus. / Berlin [printed]. Both syntypes have been given a red syntype label by me reading: SYNTYPE (f) / *Ochromyia petersiana* / Loew, 1852: 660 / K. Rognes 3 May 2012. Measurements: Length: 7.5mm (n=2). Frons at vertex / head width ratio: 0.275–0.280 (mean 0.278, n=2).

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